THOMSON CONSUMER ELECTRONICS

Service

NORDMENDE THOMSON TECHNOLOGY SABA TELEFUNKEN THOMSON

AUDIOVISION
AUDIOVISION
AUDIOVISUEL

VIDEORECORDER

Chassis R 4000
Mono

Bestell-Nr. 102.859.80

ACHTUNG! Ersatzteilbestellungen
sind schneller und kostengünstiger über
Fax 0511 / 418 - 12 60

Schaltbilder / Circuit diagrams

Service-Hinweise / Service Notes

NORDMENDE	SABA	TELEFUNKEN	THOMSON
V 1140 IMC	VR 5020	M 9415	VP 2401
V 1242 SV	VR 5021 V762 b1901	M 9420	
V 1343 SV	VR 5025	M 9425	
V 1440 IMC	VR 5035	M 9430	
V 1444 SV	VR 5040	M 9440	
	VR 5045	M 9445	

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Hinweis:
Mechanische Einstellungen entnehmen Sie bitte der Service Information für das Laufwerk R4000.

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Note:
Mechanical adjustments please take from the service manual for Mecha-Deck R4000.

Videorecorder R4000 / Mono

PAL / MESECAM

Model	Heads	VPS/PDC	Front AV	EEPROM	Size	General	Service Setup Values*
M 9415	2	+		ST24C08	8k		410822160008100012
M 9420	2	+		ST24C08	8k		410822160008100012
M 9425	2 / LP	+	+	ST24C08	8k		410822170409110212
M 9430	3	+		ST24C08	8k		410822161009100012
M 9440	4	+		ST24C08	8k		
M 9445	4	+	+	ST24C08	8k	NTSC PB	410822172411112312
V 1140 IMC	2	+		ST24C08	8k		110822160008100012
V 1242 SV	2 / LP	+		ST24C08	8k		110822170009100212
V 1343 SV	3	+		ST24C08	8k		
V 1440 IMC	4	+		ST24C08	8k		110822172008100212
V 1444 SV	4	+	+	ST24C08	8k		110822172409110212
VR 5020	2	+		ST24C04	4k		510802160008080000
VR 5021	2	+		ST24C04	4k		
VR 5025	2	+		ST24C04	4k	LED	510822160001080001
VR 5035	3	+		ST24C04	4k		510822161001080001
VR 5040	4	+		ST24C04	4k	LED	510802172008080200
VR 5045	4	+		ST24C04	4k		510822172001090201
VP 2401	2	prepared		ST24C08	8k		010821170009100212
FV 80 B	2 / LP			ST24C04	4k	LED	770901170008000200
FV 81 LV	2 / LP	+		ST24C08	8k		770921170003031213
FV 82 LV	4	+		ST24C08	8k		770921172003031213

* Weitere Einzelheiten zu den Service Setup Einstellungen finden Sie im Kapitel " Einrichten der Bedienteil-Software"
* For more details concerning the Service Setup Values refer to the chapter "KDB Software Set-Up".

1. Service Hinweise

1.1 Demontage des Gerätes

1.1.1 Gehäuse

a) **3 Schrauben an der Rückseite des** Gehäuses herausdrehen.
b) Falls vorhanden, die zwei seitlichen Schrauben herausdrehen
c) Das Gehäuseoberteil leicht nach hinten ziehen und **anheben.**

1.1.2 Frontblende

a) 2 Schrauben an der Oberseite **links und rechts vom** Cassettenfach herausdrehen.
b) 4 Kunststoffzungen an der Oberseite anheben.
c) 2 Kunststoffzungen an der Unterkante der **Frontblende** anheben und die Frontblende abnehmen.
d) Hinweis: Bei der Montage der Frontblende ist darauf zu achten, daß die Kassettenfachklappe hinter den Betätigungshebel auf der linken Seite des Kassettenschachts positioniert wird. Bei der Montage darf keine Kassette eingelegt sein.

1.1.3 Netzteil-Platte

a) Zwei Schrauben lösen **und Netzteil nach oben** herausziehen.
b) Abschirmung von der Unter- **und** Oberseite **des Netzteils abziehen.**

1. Service Notes

1.1 Disassembly

1.1.1 Top cover

a) Remove three screws from the rear.
b) Remove the two side screws (not in all cases).
c) Pull the top cover slightly backwards and lift.

1.1.2 Front panel

a) Remove the two screws **on the front left and right side** of the cassette housing.
b) Bend the four top hooks of the front panel upwards **to** disengage them from their chassis retainers.
c) Disengage the two lower hooks of the front panel and pull the front panel forward and downward to remove.
d) Note: When remounting the front panel it is necessary to position the cassette flap behind the lever at the lefthand side of the cassette housing. When mounting the front panel there should be no cassette inserted.

1.1.3 Power supply board

a) Remove 2 scews to take out the power supply.
b) Remove the cover from the lower and the upper side of the power supply.

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nounting
rted.

r side of

1.1.4 Bedienteil-Platte (Key Display Board)

a) 3 Rastnasen an der Oberkante der Bedienteil-Platte anheben und Platte nach vorne/oben herausheben.

1.1.5 Front-Anschlußplatte (nicht bei allen Geräten)

a) Eine Schraube entfernen und 2 Rastnasen anheben. Die Platte nach vorn abnehmen.

1.1.6 Bodenplatte

a) Eine Schraube aus der Bodenplatte entfernen.
b) Die Bodenplatte (in der Mitte) entrasten, nach vorn schieben und abnehmen.

1.1.7 Hauptleiterplatte kpl. mit Laufwerk(Mecha Deck)

a) Die Schaube in der Mitte der Bodenplatte von unten entfernen.
b) Frontblende entfernen und die Steckverbindungen auf der Bedienteil-Platte lösen.
c) 2 Schrauben links und rechts (von oben) des Laufwerks herausdrehen.
d) Die 6 Clips, die die Hauptplatine halten, lösen.
e) Hauptleiterplatte kpl. mit Laufwerk nach oben herausnehmen.

1.1.8 Kassettenschacht

Vorher Pkt. 1.1.7 durchführen.

a) 2 Schrauben links und rechts am Kassettenschacht lösen.
b) Den oberen Teil des Kassettenschachtes abheben.
c) Den Kassettenhalter bis zum vorderen Anschlag zurückziehen.
d) Die zur Kopftrommel zeigende Seite des Kassettenhalters leicht anheben.
e) Die weißen Hebel links und rechts am Kassettenhalter entriegeln und den Kassettenhalter in Richtung Kopftrommel schieben, bis die hinteren Führungszapfen aus ihrer Führung genommen werden können
f) Jetzt den Kassettenhalter wieder in die entgegengesetzte Richtung ziehen, bis auch die vorderen Führungszapfen aus der Führung genommen werden können.

1.1.9 Hauptleiterplatte vom Laufwerk trennen

Vorher Pkt. 1.1.7 durchführen.

a) Steckverbindungen BT005 (zum Funktions-Kontrollmotor), BV001 (Kopftrommelmotor) und BS031 (Ton-/Kontrollkopf) von der Grundplatte abziehen.
b) Eine, mit einem Pfeil markierte Schraube, von der Lötseite der Hauptplatine herausdrehen.
c) Antriebsriemen entfernen.
d) Leiterplatte entrasten (4 Clips) und abnehmen.

1.1.10 Scartanschlußplatte

a) Die Hauptleiterplatte kpl. mit Laufwerk ausbauen.
b) 2 Schrauben aus der Scartbuchsenabdeckung herausdrehen. Die Abdeckung entrasten und abziehen.
c) Die Scartanschlußplatte ist in die Hauptleiterplatte eingelötet.

1.1.4 Key Display Board

a) Disengage the three hooks on the upper edge of the KDB and remove the board in a forward and upward direction.

1.1.5 Front connection board (not in all cases)

a) Remove one screw and release the to clips at the upper edge of the board.

1.1.6 Bottom cover

a) Take out one screw from the base.
b) Release the clip in the center of the bottom cover, push the cover to the back and lift it.

1.1.7 Main board assy. with Mecha Deck

a) Remove the centre screw from the base.
b) Remove the front panel and disconnect the cable connections on the key display board.
c) Remove 2 screws on the left and right of the Mecha deck.
d) Release the 6 clips, which are securing the main board.
e) Remove the Mecha Deck with the main board upwards.

1.1.8 Cassette housing

Before doing this step please do step 1.1.7.

a) Take out two screws at the left and the right side of the upper part of the cassette holder.
b) Remove the upper part of the cassette holder
c) Pull the remaining part to the upper end position.(Eject position)
d) Lift the cassette holder at the side, which shows to the drum.
e) Release the white levers (left and right of the casstte holder) and push the cassette holder towards the drum until the guide pins at the rear side come out of the guide rails.
f) Now pull the cassette holder in the opposite direction until the guide pins at the front side also come out of the guide rails.

1.1.9 Separate Main board from Mecha Deck

Before doing this step please do step Pt.1.1.7.

a) Disconnect the cable connection BT005 (to function control motor), BV001 (to drum motor) and BS031 (to audio- / servo control head).
b) Take one screw marked with an arrow from the solder side of the main board.
c) Remove the capstan belt.
d) Release the 4 clips and remove the main board.

1.1.10 Scart connection board

a) Remove the main board assy. with the Mecha Deck.
b) Take out 2 screws from the scart board cover. Disengage two hooks and remove the cover.
c) Scart board is soldered into the main board.

1.2 Austausch der Kopftrommeleinheit

Hinweis: Zum Austausch des Oberteils der Kopftrommel werden speziell dafür entwickelte Werkzeuge benötigt. Ohne diese Werkzeuge ist ein exakter Zusammenbau der Kopftrommel nicht möglich. Die benötigten Werkzeuge sind in einem Service Kit lieferbar. Die genaue Beschreibung der Vorgehensweise zum Austausch des Kopftrommeloberteils finden Sie in der Unterlage "Mechanische Einstellungen R4000".

Zum Ausbau der Kopftrommeleinheit ist es **nicht** erforderlich, das Laufwerk auszubauen.
(Siehe Bild unten)

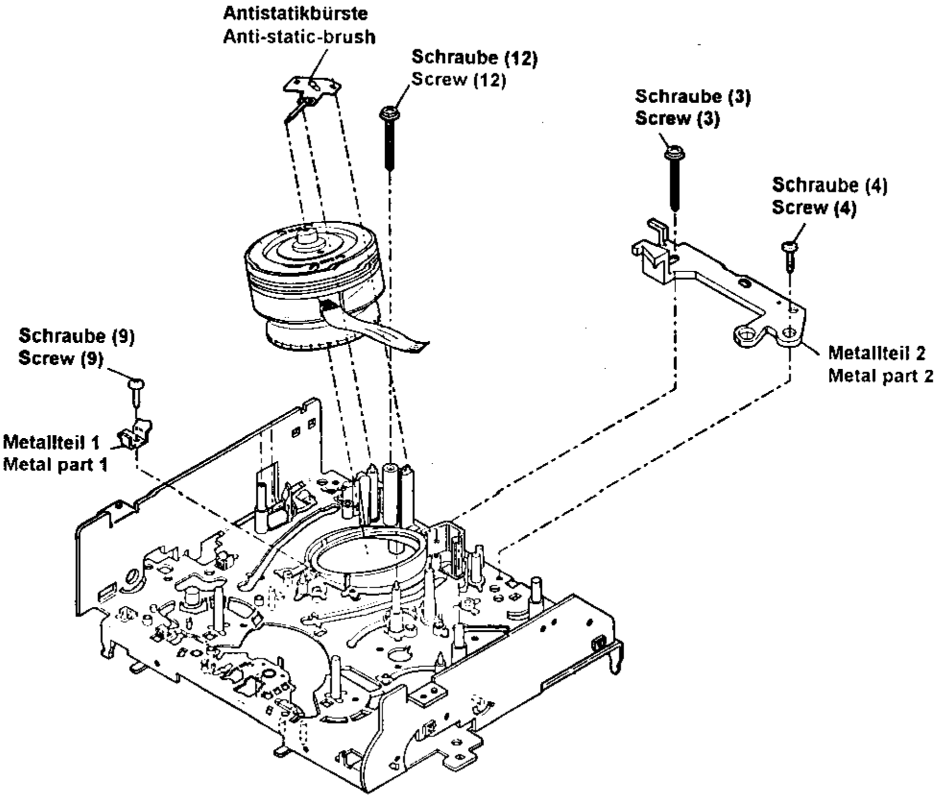
a) Die Schraube (12) an der Antistatikbürste (oben auf der Kopftrommel) herausdrehen und die Antistatikbürste entfernen.
b) Schraube (9) und das Metallteil 1 (rechts neben dem Bandzug- Fühlhebel) entfernen.
c) 2 Schrauben (3 und 4) und Metallteil 2 (oberhalb der Kopftrommel) entfernen.
d) Verbindungsleitung von der Kopftrommel zum Main Board (BV001) lösen.
e) Kopftrommeleinheit herausnehmen.

1.2 Exchange of drum unit

Note: To exchange the upper part of the drum unit it is necessary to use special tools. Without these tools it is not possible to re-assemble the drum exactly. These tools are delivered in a Service Kit. A detailed description of the disassembly and assembly of the drum unit is given in the document "Mechanical Adjustments R4000"

It is **not** necessary to remove the mechanism in order to remove the drum unit.
(Refer to the picture below)

a) Remove the screw (12) and the anti-static brush at the top of the drum unit.
b) Remove one screw (9) and the metal part 1 in front of the drum (on the right next to the tension arm)
c) Remove two screws (3 and 4) and the metal part 2 behind the drum unit.
d) Remove the wire connection from Main board (BV0019 to the drum unit.
e) Remove the drum unit.



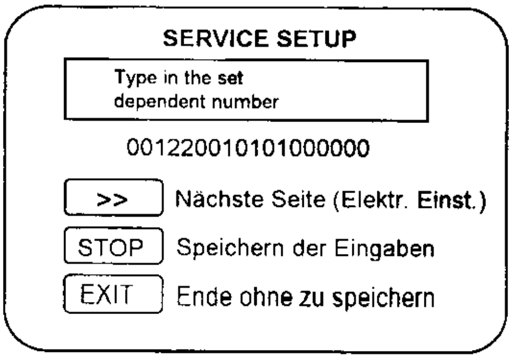
1.3 Service Einstellungen

1.3.1 Einrichten der Bedienteil-Software

Es ist notwendig den KDB-Prozessor über die bestehende Hardware-Konfiguration zu informieren. Dies wird bereits ab Werk konfiguriert und in den EEPROM abgelegt.

1. Videorecorder vom Netz trennen.
2. Tasten "-" und "+" an der Frontseite gedrückt halten und dabei den Recorder am Netz anschließen.

Auf dem TV-Schirm werden 18 Ziffern angezeigt, die den aktuellen Zustand des Gerätes anzeigen.
Im Display erscheint "SETUP".
Im Service Mode können einige typenspezifische Einstellungen vorgenommen werden. In der **Tabelle auf Seite 3 dieser Unterlage** ist für jeden Gerätetyp die spezifische Zahlenkombination angegeben. Die Bedeutung der einzelnen Ziffern ist in der nachfolgenden Tabelle (Seite 7) aufgeführt. Die jeweils einzustellende Ziffer blinkt auf dem Bildschirm. Die Eingaben werden mit den Zifferntasten auf der Fernbedienung durchgeführt. Nachdem alle 18 Ziffern eingegeben wurden, blinkt die erste Ziffer wieder.
Um die neuen Einstellungen abzuspeichern, drücken Sie bitte die STOP Taste. Sie können den Service Mode auch verlassen, ohne abzuspeichern. Dazu drücken Sie bitte die EXIT Taste auf der Fernbedienung.
Wenn Sie die neuen Werte abgespeichert haben, dauert es einige Sekunden, bis diese in das EEPROM geschrieben sind. Während dieser Zeit bleibt das Display dunkel.


SERVICE SETUP

Type in the set
dependent number

001220010101000000

[>>] Nächste Seite (Elektr. Einst.)
[STOP] Speichern der Eingaben
[EXIT] Ende ohne zu speichern

Die Taste "Schneller Vorlauf (>>)" dient zur Auswahl der zweiten Seite des Service Modes. In dieser zweiten Ebene werden einige elektrische Einstellungen für die Signalverarbeitung vorgenommen. Eine genauere Beschreibung dieser Funktion finden Sie im Kapitel "Elektrische Einstellungen".

Anmerkung:

Nach der Änderung der Einstellungen im Service Mode ist es erforderlich, den Kopftrommel - Umschaltpunkt neu zu setzen.

1.3.2 Kopf-Trommel-Umschaltpunkt

Legen Sie eine schreibgeschützte Video-Meßkassette (Farbbalken oder Grautreppe) in den Videorecorder. Der Recorder geht automatisch in Wiedergabe. Während das Display "PLAY E----" anzeigt, drücken Sie auf der Fernbedienung die Taste "Status". Anschließend drücken Sie am Gerät die Tasten "PLAY" und "+" und "-" gleichzeitig. Das Display zeigt "ADJ" an. Der Videorecorder bleibt in Wiedergabe Mode. Nach einer kurzen Wartezeit beenden Sie die Einstellung, indem Sie eine beliebige Laufwerks-Taste am Bedienteil der Frontblende drücken.
(siehe auch Punkt 2.6.5 der elektrischen Einstellungen)

1.3.3 Sprachumschaltung

Taste "**STATUS**" der Fernbedienung gedrückt halten, bis die gewünschte Sprache im Display und auf dem Bildschirm erscheint.

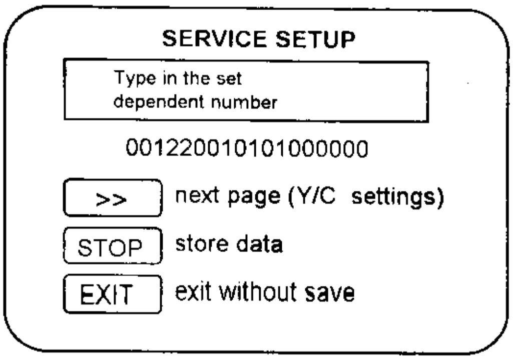
1.3 Service Adjustments

1.3.1 KDB Software Set-Up

It is necessary to inform the KDB processor which hardware configuration is present. This is done in the factory and the selections stored in the EEPROM.

1. Disconnect the VTR from the mains.
2. Hold keys "-" and "+" pressed and connect the VTR to the mains.

On the TV screen 18 digits are shown, representing the actual Setup values.
The display shows "SETUP".
In this SERVICE SET UP mode, some VTR-TYPE specific settings can be done. In the **table on page 3 of this document** you will find the values to be entered for each specific set. The meaning of each digit is listed in the following table (page 7). The actual digit for the input is flashing on the screen. The inputs are done by the numeric keys on the remote control. After the input of all 18 digits, the first digit is flashing again. Store the new settings by pressing the STOP key on the remote control. You can also leave the SERVICE SET UP mode without storing the new settings. To do so, please press the EXIT key on the remote control.
If you have decided to store the new settings, it takes some seconds to initialise the EEPROM. During this time the display remains dark.


SERVICE SETUP

Type in the set
dependent number

001220010101000000

[>>] next page (Y/C settings)
[STOP] store data
[EXIT] exit without save

The key "FAST FORWARD (>>) is used to switch over to the second page of the Service Mode. This function is used to perform some electrical adjustments for the signal processing. More details about this item you will find in the chapter "Electrical Adjustments".

Important note:

After the modification of the settings in the Service mode, a new adjustment of the HEAD SWITCHING POINT is necessary.

1.3.2 Head switching point

Insert a protected adjustment test cassette into the video recorder. Playback is set automatically. When the display shows "PLAY E----" press the key "STATUS" on the remote control. After that, press PLAY and "+" and "-" keys on the front panel (Hold all three keys pressed).The display indicates "ADJ". The VCR will stay in PLAY mode. After a few seconds, stop the adjustment by pressing Stop key on the front panel.
(see point. 2.6.5 of the electrical adjustments)

1.3.3 Language selection

Keep the STATUS key pressed down, to choose the language of the menus on the display and on the TV screen.

Number of digit	Meaning	Value	
1	Brand	0 - Thomson 1 - Nordmende 2 - Ferguson (Thomson) 3 - Thomson (ASIA) 4 - Telefunken 5 - Saba 6 - Brandt 7 - Ferguson (Saba) 8 - GE (Australia)	
2	Tuner Sound	0 - L (4.5 MHz AM) 1 - BG (5.5 MHz FM) 2 - I (6 MHz FM) 3 - DKK'(6.5 MHz FM) 4 - BH (5.5 MHz) 5 - DK'(China) 6 - NTSC-M 7 - PAL I UK	
3 and 4	Tuner standard	00 - Secam L 01 - PAL-Secam (Multi) 02 - Central Europe (BG,DK,L 03 - Pan Europe (BG,DK,L,I,M) 08 - Germany (BG) 09 - UK (PAL I Ire, PAL I UK) 10 - ME (BG,DK) 11 - AU (BG,BH) 12 - X (BG,DK,I) 13 - FE,HK,China (BG,DKK',I,DK"C") 14 - FM (BG,DKK',I,DK"C",M)	DKK'= DK OIRT DK"C" = DK China
5	KDB Version	0 - LED Keyboard 1 - VFD/NTSC (OSD by Main µP) 2 - VFD (OSD by Front µP)	
6	Language	0 - french/malay 1 - english 2 - german/chinese 3 - italien/thai 4 - spanish 5 - swedish 6 - dutch	
7 and 8	Servo Type	bit 0 - Longplay enabled = 1 bit 1 - HIFI enabled = 1 bit 2 - Dubbing enabled = 1 bit 3 - Flying erase enabled = 1 bit 4 - Auto play enabled = 1	15_{dec} = (01111) Fly erase /dubbing/Hifi / LP if one bit is 0 , the corresponding function is disabled
9	Servo Type (Heads)	0 - 2 head PAL 1 - 3 head PAL 2 - 4 head PAL 3 - 2 head NTSC 4 - 2 head PAL/SECAM 5 - 3 head PAL/SECAM 6 - 4 head PAL/SECAM 7 - 4 head NTSC	
10	Scart	0 - 2 Scart connectors 1 - 1 Scart connector 2 - 6 RCA (Cinch) (2 in 1 out) + Si 3 - 4 RCA (Cinch) (1 in 1 out) 4 - 2 Scart connectors + Front AV 5 - 1 Scart connector + Front AV 6 - 6 RCA + Front AV + Si 7 - 4 RCA + vFront AV	
11 and 12	Special functions	bit 0 - VIDEO + bit 1 - Satellite control bit 2 - Learning Remote Control bit 3 - Expertmode is default	if one bit is 0 , the corresponding function is disabled
13 and 14	Special functions	bit 0 - Auto Programming bit 1 - Station Identification bit 2 - Index Plus bit 3 - PDC	if one bit is 0 , the corresponding function is disabled
15	Special functions	bit 0 - Auto Clock bit 1 - NTSC playback allowed bit 2 - NTSC record allowed	if one bit is 0 , the corresponding function is disabled
16	Special functions	bit 0 - TV playback selection PAL-NTSC bit 1 - Auto LP Record	if one bit is 0 , the corresponding function is disabled
17 and 18	I.D. Tagging	bit 0 - Tagging bit 1 - Advertising message bit 2 - Channel Identification bit 3 - 99 programs/8 Timers	if one bit is 0 , the corresponding function is disabled

For the digits 7 and 8 and 11 to 18, the corresponding values of each bit have to be added, to calculate the decimal value.

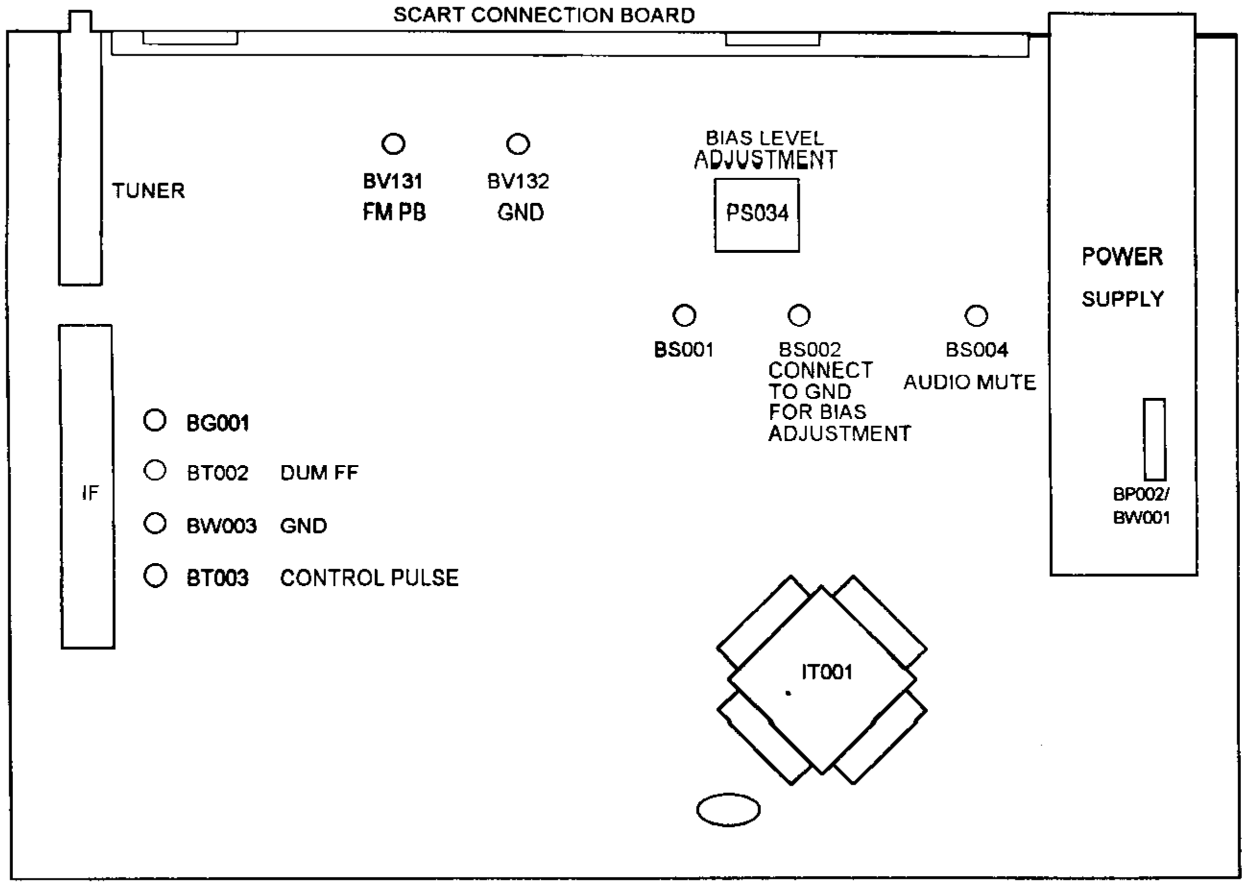
Bei den Digits 7 und 8 und 11 bis 18 müssen die Dezimalzahlen durch Addition der Wertigkeit der einzelnen Bits ermittelt werden.

Bit 0 = 1 Bit 1 = 2 Bit 2 = 4 Bit 3 = 8 Bit 4 = 16

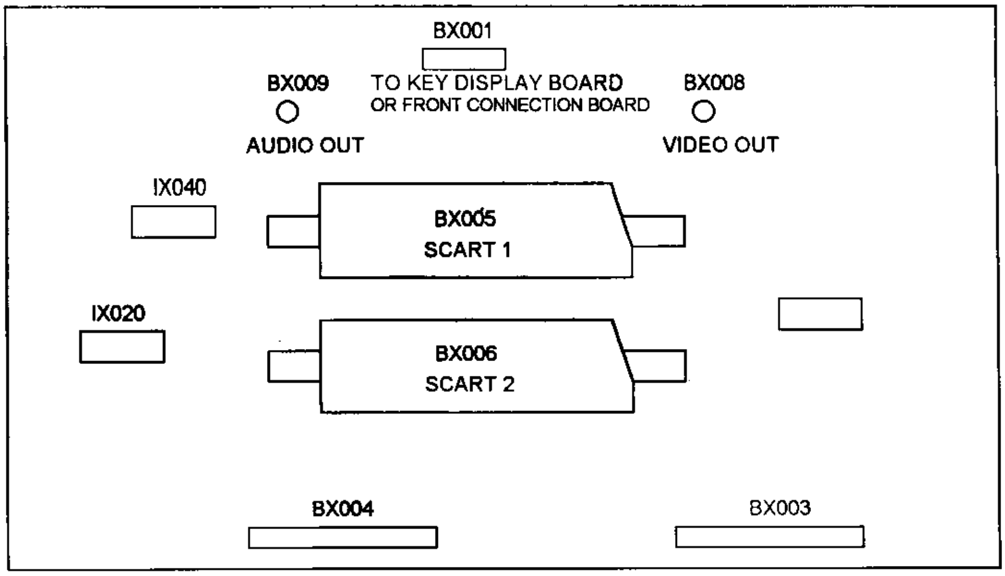
2. Electrical Adjustments / Elektrische Einstellungen

2.1 TEST POINT- AND ADJUSTMENT OVERVIEW · TESTPUNKT- UND ABGLEICH - ÜBERSICHT

MAIN BOARD · HAUPTLEITERPLATTE


SCART CONNECTION BOARD
TUNER
BV131
FM PB
BV132
GND
BIAS LEVEL
ADJUSTMENT
PS034
POWER
SUPPLY
BS001
BS002
CONNECT
TO GND
FOR BIAS
ADJUSTMENT
BS004
AUDIO MUTE
BG001
BT002
DUM FF
IF
BW003
GND
BT003
CONTROL PULSE
BP002/
BW001
IT001

SCART CONNECTION BOARD · SCART- ANSCHLUSSPLATTE


BX001
BX009
TO KEY DISPLAY BOARD
OR FRONT CONNECTION BOARD
BX008
AUDIO OUT
VIDEO OUT
IX040
BX005
SCART 1
IX020
BX006
SCART 2
BX004
BX003

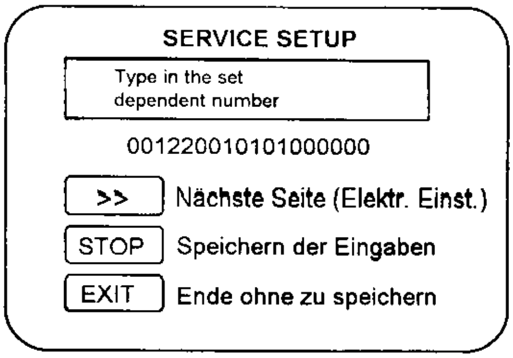
den.

2.2 Einrichten der Video-Signalverarbeitung

Die Geräte werden in der Fabrik automatisch abgeglichen. Dabei werden die ermittelten Daten im EEPROM des Videorecorders abgespeichert. Ein Abgleich der Video-Signalverarbeitung von Hand ist nicht mehr erforderlich.
Sollte bei einem Defekt des Gerätes das EEPROM zerstört sein, dann können die Daten für die Video-Signalverarbeitung über das Service Menü eingegeben und im neuen EEPROM gespeichert werden. Um das Service Menü zu aktivieren, gehen Sie bitte nach den folgenden Anweisungen vor.

1. Videorecorder vom Netz trennen.
2. Tasten "-" und "+" an der Frontseite gedrückt halten und dabei den Recorder am Netz anschließen.

Auf dem Bildschirm erscheint das Service Menü.



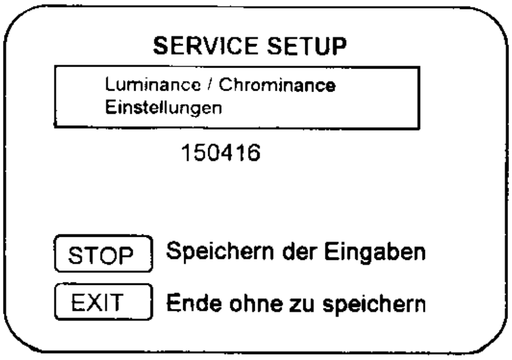
SERVICE SETUP

Type in the set
dependent number

001220010101000000

[>>] Nächste Seite (Elektr. Einst.)
[STOP] Speichern der Eingaben
[EXIT] Ende ohne zu speichern

Aktivieren Sie die zweite Seite des Service Modes, indem Sie auf der Fernbedienung Taste "Schneller Vorlauf (>>)" drücken.
Es erscheint das folgende Menü auf dem Bildschirm.



SERVICE SETUP

Luminance / Chrominance
Einstellungen

150416

[STOP] Speichern der Eingaben
[EXIT] Ende ohne zu speichern

Die 6-stellige Ziffernfolge zeigt die Werte für den aktuellen Abgleich. Die Bedeutung der einzelnen Ziffern ist in der nachfolgenden Tabelle aufgeführt. Die Eingaben werden mit den Zifferntasten auf der Fernbedienung durchgeführt. Falls eine neue Eingabe der Daten erforderlich ist, geben Sie bitte die folgende Ziffernfolge ein.

150416

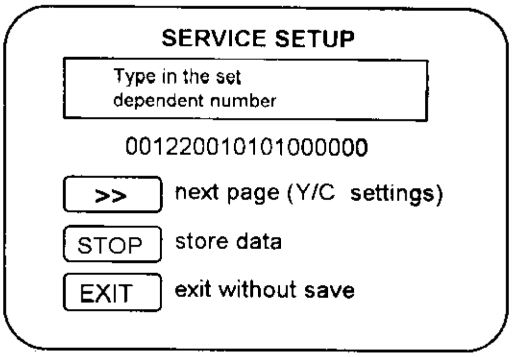
Diese Ziffernfolge stellt die Daten für einen optimalen Abgleich dar und gilt für alle Geräte.

2.2 Installation of the video signal processing

The sets are adjusted automatically in the factory. The data for the adjustment are saved inside the EEPROM. A manual adjustment of the video signal processing is not necessary. In case of a defect of the EEPROM the data for the adjustment of the video signal processing can be entered via the the Service Setup and saved in the EEPROM. To perform the input of the data for the video signal processing, the Service Mode has to be activated as mentioned below.

1. Disconnect the VTR from the mains.
2. Hold keys "-" and "+" pressed and connect the VTR to the mains.

The Service Menu will appear on the TV screen.



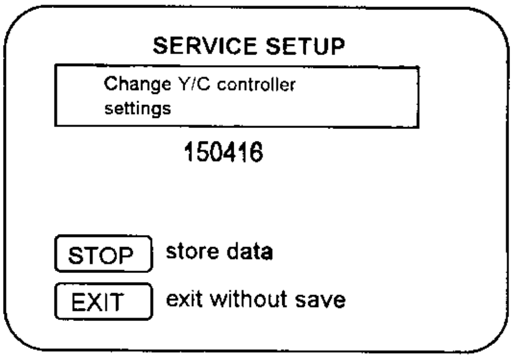
SERVICE SETUP

Type in the set
dependent number

001220010101000000

[>>] next page (Y/C settings)
[STOP] store data
[EXIT] exit without save

Activate the second page of the Service Mode by pressing the "FAST FORWARD (>>)" key on the remote control.
The following picture appears on the TV screen.



SERVICE SETUP

Change Y/C controller
settings

150416

[STOP] store data
[EXIT] exit without save

The 6 digits on the screen are representing the actual values for the adjustment. The meaning of each digit is listed in the following table. The inputs are done by pressing the numeric keys on the remote control. If the new input of the data is necessary, please put in the following numbers.

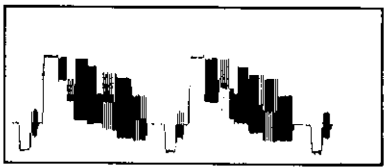
150416

They are valid for all sets and represent an optimal adjustment.

Number of the digit	Meaning	Value	Example
1 and 2	Playback Equalizer	bit 0-1 : PB EQ GAIN (00:min 11:max) bit 2-3 : PB EQ 2 (00:min 11:max)	$1111_b = 15_d$
3		Always 0	
4	Y/C Record Current	bit 0-2 : REC C (000:max 111:min)	$101_b = 5_d$
5	PB Noise Canceller	PBNC2 on/off	0 = off 1 = on
6	Secam Record Current	REC C Level (000:max attn 111:min attn)	$101_b = 5_d$

Description of digits used for the video signal processing setup.
Beschreibung der einzelnen Digits für die Einrichtung der Video Signalverarbeitung.

2.3 Video signal processing (Main board) · Traitement vidéo (Platine principale) Video Signalteil (Hauptleiterplatte)

N°:	Einstellung Item	Betriebsart Mode & Signal	Meßmittel Eingangssignal Test Equipment Input Signal	Meßpunkt Testpoint	Einstell-Punkt Adjustment Point	Beschreibung Description
2.3.1	E-E - level E-E - Pegel	E-E Colour bar 1 V_{pp} E-E Farbbalken, 1 V_{ss}	Oscilloscope Oszilloskop	BX008 (Scart connection board) or pin 19 of SCART BX008 der Scart Anschluß-Platte oder Anschluß 19 von SCART	None Kein Abgleich möglich	 Check for 2.0 V_{pp}±0,1 V_{pp} 2.0 V_{ss} ±0,1 V_{ss} messen
2.3.2	FM REC level FM-Aufnahme - Pegel	REC without signal REC ohne Signal	Oscilloscope Oszilloskop	BV 03, Pin 11	Service Menu	Check for 760 mV_{pp} ±20 mV_{pp} 760 mV_{ss} ±20mV_{ss} überprüfen
2.3.3	PAL Chroma REC-level PAL Farbaufnahme-Pegel	REC PAL Colour bar REC PAL Farb-balken	Oscilloscope Oszilloskop	TC112 Emitter	Service Menu	Check for 100 mV_{pp} ±10 % burst amplitude 100 mV_{ss} ±10 % Burstamplitude überprüfen
2.3.4	SECAM Chroma REC-level SECAM Farbaufnahme-Pegel	REC SECAM Colour bar REC SECAM Farb-balken	Oscilloscope Oszilloskop	TC112 Emitter	Service Menu	Check for 80 +/- 10 mVpp magenta bar amplitude. Magenta Farbbalken auf eine Amplitude von 80 +/- 10 mVss überprüfen.

2.4 Power Supply · Alimentation · Netzteil

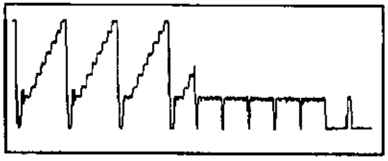
N°:	Einstellung Item	Betriebsart Mode & Signal	Meßmittel Eingangssignal Test Equipment Input Signal	Meßpunkt Testpoint	Einstell-Punkt Adjustment Point	Beschreibung Description
2.4.1	DC supply voltage checks Überprüfen der Versorgungsspannungen	Standby	Voltmeter	BW001: pin 1/2 pin 3 pin 4 pin 5 pin 6/7 pin 12-14 **pin 15/16**	None keine Einstellung möglich	**Main board BW001** **Hauptleiterplatte BW001** 4,1 Volt +0,3 V / -0,7 V -30 Volt ± 2,0 V +34 Volt ± 2,0 V +5 Volt +1,5 V / -0,1 V (after 3 sec) +20 Volt ± 3,0 V 14,3 Volt ± 0,5 V +6 Volt +0,5 V / -0,3 V
2.4.2	Switching period Periodendauer	stand-by	Oscilloscope	LP20 pin 17	None	Check switching period of 42 µs ±6µs Prüfung der Periodendauer 42 µs ±6 µs
2.4.3	Mains voltage operating range Arbeitsbereich der Betriebsspannung	E-E	Voltmeter		None	Confirm same values as above over the entire voltage range of 198 Volts to 255 Volts Gleiche Werte wie oben prüfen innerhalb der Spannungen 198 bis 255 Volt

2.5 Audio signal processing · Traitement Audio · Audio Signalverarbeitung

N°:	Einstellung Item	Betriebsart Mode & Signal	Meßmittel Eingangssignal Test Equipment Input Signal	Meßpunkt Testpoint	Einstell-Punkt Adjustment Point	Beschreibung Description
2.5.1	Audio BIAS level Audio Vormagnetisierung	REC without Signal REC ohne Signal	AF millivoltmeter NF-Millivoltmeter	BS 001 BS 002 GND	PS 034 PS 034	Adjust for 3.6 mV ± 0.1 mV rms Auf 3.6 mV ± 0.1 mVeff einstellen
2.5.2	PB audio level PB Audio-Pegel	PB colour bar test pattern 1KHz, 0dB PB Farbbalken Meßkassette 1KHz, 0dB	Oscilloscope Oszilloskop	SCART, pin 1/3 SCART, Anschluß 1/3	None kein Abgleich	Check for 1,4 V_{pp} ± 0.2 V_{pp} 1,4 V_{SS} ± 0,2V_{SS}

2.6 Measurements Servo part - Main board
Messungen Servoteil - Hauptleiterplatte

Note: low level < 0.8 V; high level > 4.0 V   Anmerkung: L-Pegel < 0,8 Volt; H-Pegel > 4,0 Volt

N^O:	Einstellung Item	Betriebsart Mode & Signal	Meßmittel Eingangssignal Test Equipment Input Signal	Meßpunkt Testpoint	Einstell-Punkt Adjustment Point	Beschreibung Description
Hinweis: Der Einsteller für den Oszillator Abgleich (PT 101) ist nur erreichbar, wenn das Laufwerk ausgebaut wird. Um den Abgleich vornehmen zu können, muß wenigstens die Leitung BT 005 zur Funktionskontrolleinheit angeschlossen werden.				**Note:** The variable capacitor (PT 101) for the oscillator adjustment is available only if the mecha deck is removed from the main board. For the adjustment it is necessary to connect at least the connection BT 005 to the function control unit.		
2.6.1	Oscillator Frequency Oszillator Frequenz	Service Mode	Frequency counter Frequenz-zähler	IT 001 pin 63	PT 101	1.) Activate the Service Mode 2.) Adjust for 4 MHz ± 40 Hz 1.) Service Mode aktivieren 2.) 4 MHz ± 40 Hz einstellen
2.6.2	+5VD (Digital) +5VD (Digital)		Voltmeter	Emitter TT200	None	Confirm 5.1 V ± 0.2 V 5,1 V ± 0.2 V überprüfen
2.6.3	Drum FF Kopftrommel-Flip-Flop	REC/ PB	Oscilloscope	TP-BT 002 Drum FF	None	Confirm 25 Hz signal 25 Hz Signal überprüfen
2.6.4	CTL signal CTL-Signal	PB REC PB REC	Oscilloscope	BT 003 IT 001 pin 33 BT 003 IT 001 Pin 33	None	PB: confirm 25 Hz, 5Vpp signal REC: confirm 25 Hz, 5Vpp signal PB: 25 Hz, 5Vpp Signal überprüfen REC:25 Hz, 5Vpp Signal überprüfen
2.6.5	Head Switching Point	PB	Dual-Trace Oscilloscope Trigger ext. BT 002 (Drum FF)	BX 008 or SCART, pin 19	Adjustment by software setup	1. Insert protected alignment test cassette 2. When the display shows "PLAY E----" press the STATUS key on remote control. 3. Press keys "+","-" and "PLAY". 4. Display shows "ADJ". 5. Confirm that head switching point is 6.5 H ± 1 H before vertical-sync 6. Stop the adjustment by pressing Stop key on the front panel.
	Kopf-Trommel-Umschaltpunkt	PB	Zweistrahl-Oszilloskop; Externer Triggerpkt. BT 002 (Drum FF)	BX 008 oder SCART Anschluß 19	Software-Einstellung	1. Geschützte Meßkassette einlegen 2. Taste "STATUS" auf Fernbedienung drücken, sobald Display "PLAY E---" anzeigt. 3. Tasten "+" und "-" gedrückt halten und zusätzlich Taste "Play" drücken. 4. Display zeigt "ADJ". 5. Prüfen, ob Kopfumschaltpunkt 6,5 H ± 1 H vor dem Vertikal-Synchronimpuls liegt 6. Einstellung durch Drücken einer Laufwerks Taste beenden. I<-------- 6.5 H ±1H --------->I 

2.7 IF circuit · FI · ZF-Modul

N°:	Einstellung Item	Betriebs-art Mode & Signal	Meßmittel Eingangssignal Test Equipment Input Signal	Meßpunkt Testpoint	Einstell-Punkt Adjustment Point	Beschreibung Description
2.7.1	AGC	E-E, Tuner	RF voltmeter Generator 3mV / CH09	IF Input	PI 20 inside IF box	1. Maximum 2. -10 dB
	AGC	E-E, Tuner	HF-Voltmeter, Generator 3mV / CH09	ZF-Eingang	PI 20 im ZF-Verstärker	1. Maximum 2. -10 dB

2.8 On Screen Display - Main board · OSD Platine principale · OSD - Hauptleiterplatte

N°:	Einstellung Item	Betriebs-art Mode & Signal	Meßmittel Eingangssignal Test Equipment Input Signal	Meßpunkt Testpoint	Einstell-Punkt Adjustment Point	Beschreibung Description
2.8.1	**OSD** Chroma-oscillator		Frequency-counter Frequenzzähler	TP 01	None keiner	Confirm 17,734475 MHz ± 500 Hz Überprüfen der 17,734475 MHz ± 500 Hz .

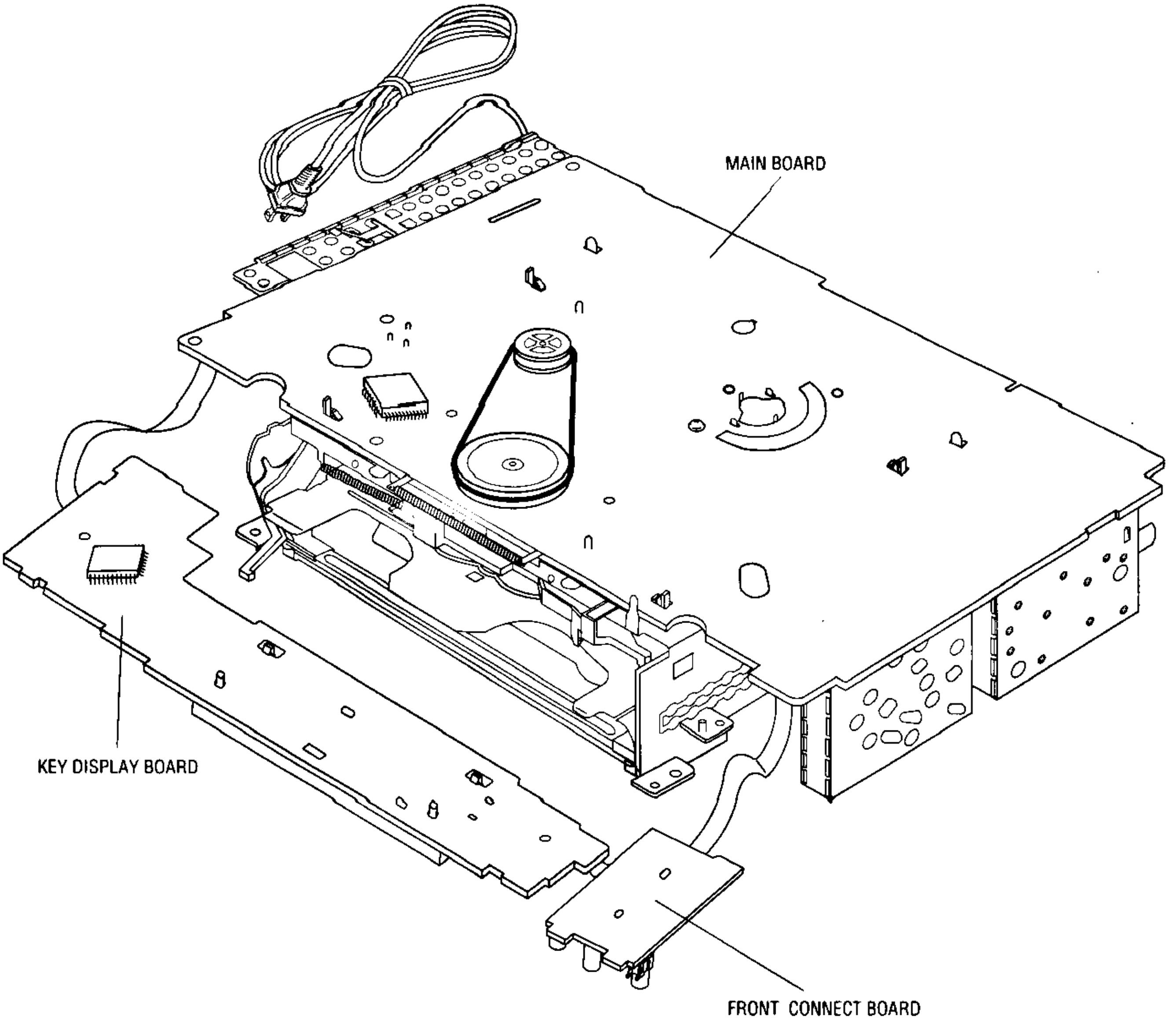
Abbreviations / Abreviations / Abkürzungen

AC	Alternating Current
ACC	Automatic Color Control
ACK	Automatic Color Killer
AD.REF	Analog/Digital Converter Reference
AE	Audio Erase
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
A_IF	Audio IF
ALC	Automatic Level Control
AMP	Amplifier
APC	Automatic Phase Control
AP.CONT	Aperture Control
AV	Audio-Video
B.EMPH	Burst Emphasis
B.DEEMPH	Burst Deemphasis
BG	Burst Gate
BID	Burst Identification
BLK	Blanking
BPF	Band Pass Filter
CAP	Capstan
CBC	Cable Box Control (Satellite Control)
CCD	Charge Coupled Device
CH	Channel
CFG	Capstan Frequency Generator
CLK	Clock
COMP	Comparator
CONV	Converter
CPWM	Capstan Pulse Width Modulation
C-REG	Capstan Regulation
CR	Color Rotary
CS	Chip Select
CSYNC	Composite Synch
CTL	Control
DC	Direct Current
D.LIM	Double Limitter
DEEMPH	Deemphasis
DET	Detector
D-FG	Drum Frequency Generator
DFF	Drum Flip Flop
DIF.EQ	Differential Equalizer
DIG	Digital
DLY	Delay
DOC	Drop Out Compensation
E-E	Electronic-Electronic
EMPH	Emphasis
ENV	Envelope
EP	Extended Play
EQ	Equalizer
F.E	Full Erase
F.REW	Fast Rewind
F.FWD	Fast Forward
F/R	Forward/Rewind
FCB	Front Connection Board
FF	Fast Forward
FG	Frequency Generator
FMCI	FM Carrier Interleave
FWD	Forward
GND	Ground
GCA	Gain Controlled Amplifier
HASEL	Head Amplifier Select
HAB	Head Amplifier Board
HD	Horizontal Synch Pulse

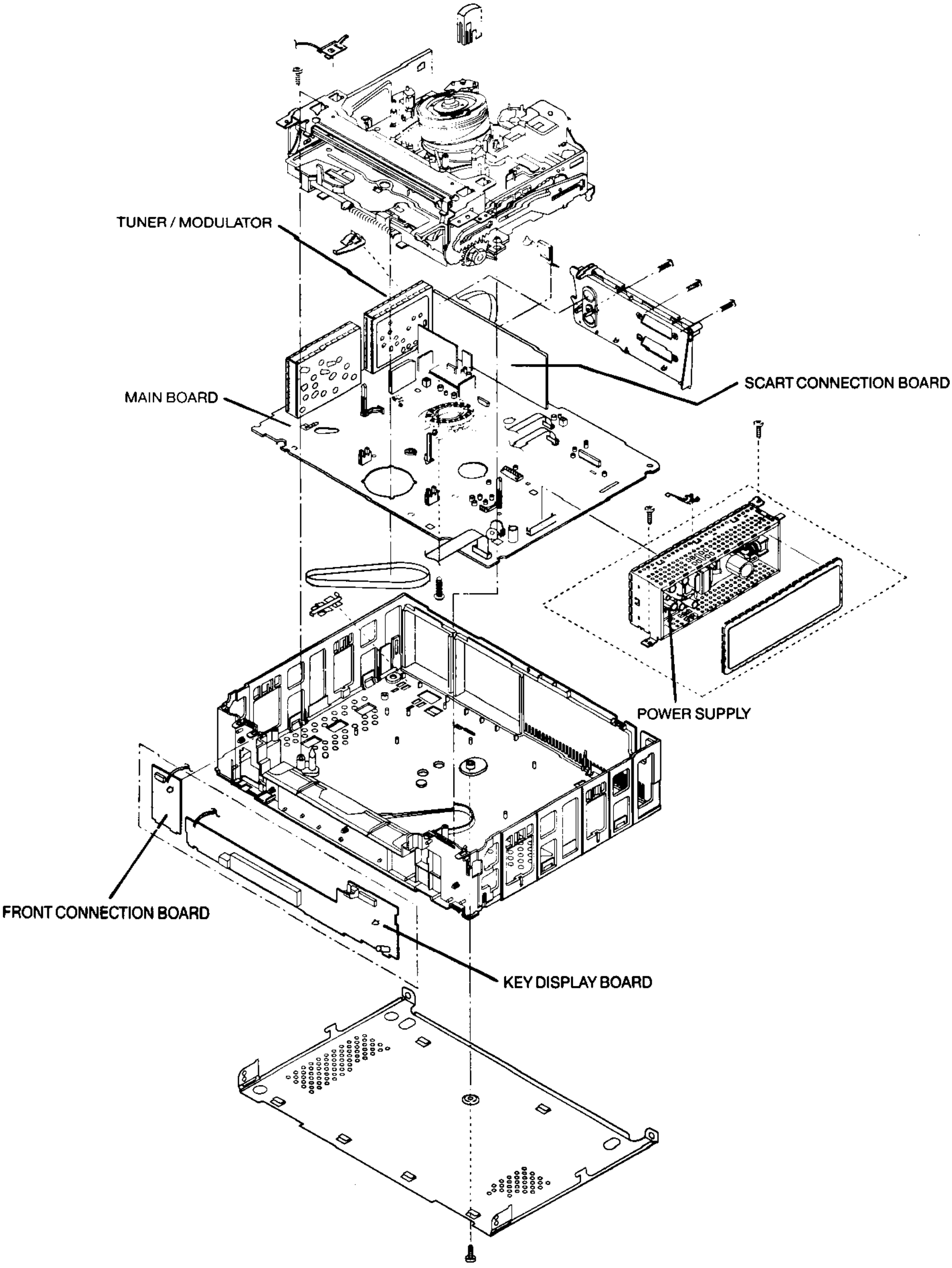
Abbreviations / Abreviations / Abkürzungen

HPF	High Pass Filter
I.R	Infra Red
ID	Identification
INP/IN	Input
KDB	Key Display Board
LIM	Limitter
LP	Long Play
LPF	Low Pass Filter
MESECAM	Middle East Secam
NC	Noise Canceller
OSD	On Screen Display
PB	Play Back
PB_C	Play Back Chroma
PCB	Printed Circuit Board
PDC	Program Delivery Control
PG	Pulse Generator
PH	Pseudo Horizontal Synch
PIF	Picture IF
PLL	Phase Locked Loop
PS	Phase Switch
PV	Pseudo Vertical Synch
PWM	Pulse Width Modulation
REC	Record
REC_C	Record Chroma
REW	Rewind
REV	Reverse
SCL	Serial Clock
SDA	Serial Data
SEC	SECAM
SU REEL	Supply Reel
SMPS	Switch Mode Power Supply
SP	Standard Play
SS	Synch Separator
SW	Switch
TU REEL	Take Up Reel
TMB	Terminal Board
VCA	Voltage Controlled Amplifier
VCO	Voltage Controlled Oscillator
VCR	Video Cassette Recorder
VD	Supply Voltage Digital
VE	Voltage (Ever)
V_ENV	Video Envelope
V_IF	Video IF
VS	Voltage (Switched)
VM	Motor Voltage (Drum & Loading motor)
VMC	Motor Voltage (Capstan motor)
VPS	Video Program System
W/D	White/Dark
Y/C	Luminance/Chrominance

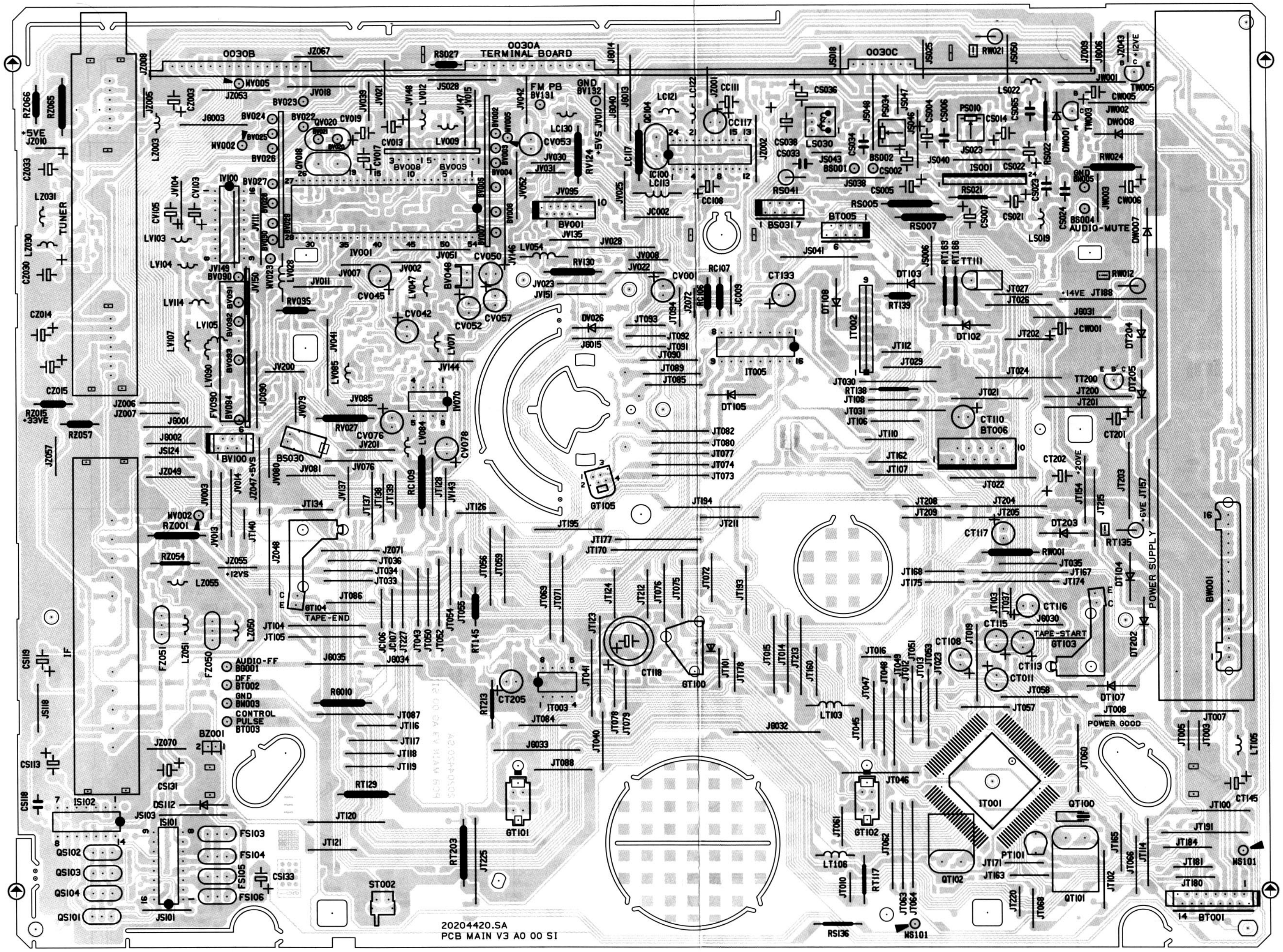
SERVICE POSITION FOR MAIN BOARD, KEY DISPLAY BOARD, AND FRONT CONNECT BOARD.


MAIN BOARD
KEY DISPLAY BOARD
FRONT CONNECT BOARD

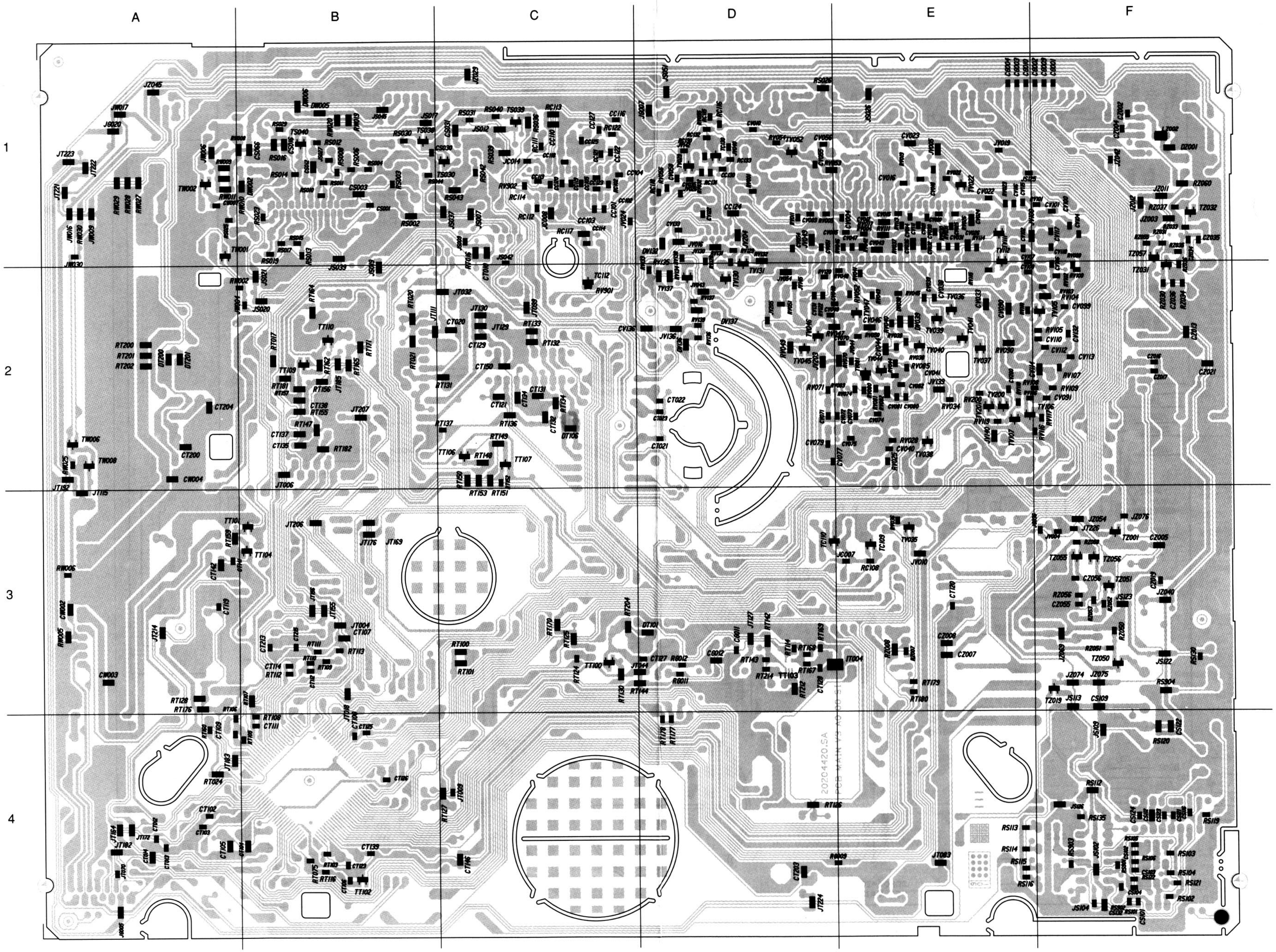
Exploded View
Explosionszeichnung


TUNER / MODULATOR
SCART CONNECTION BOARD
MAIN BOARD
POWER SUPPLY
FRONT CONNECTION BOARD
KEY DISPLAY BOARD

Main P.C.B. Component side • Circuit imprimé de la platine principale (Côté composants) • Hauptleiterplatte Bestückungsseite
Piastra principale lato componenti • Platina principal lado componentes


0030B
0030A
TERMINAL BOARD
0030C
TUNER
IF
FM PB
GND
AUDIO-MUTE
POWER SUPPLY
POWER GOOD
TAPE-END
TAPE-START
AUDIO-FF
DFF
GND
CONTROL PULSE
+5VE
+33VE
+12VS
+5VS
+14VE
+20VE
+6VE
+12VE
IV001
IC100
IT001
IT002
IT003
IT005
IS001
IS101
IS102
BW001
BT001
BV100
BS030
ST002
20204420.SA
PCB MAIN V3 A0 00 SI

Main P.C.B. Solder side • Circuit imprimé de la platine principale (Côté cuivre) • Hauptleiterplatte Lötseite
Piastra principale lato saldature • Platina principal lado del cobre

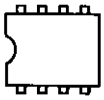

A
B
C
D
E
F
1
2
3
4
20204420.SA

CC101	C1
CC102	C1
CC103	C1
CC104	C1
CC105	C1
CC110	C1
CC113	C1
CC114	C1
CC116	C1
CC118	C1
CC119	C1
CC120	C1
CC121	C1
CC122	C1
CC123	C1
CC124	D1
CC125	C1
CC127	C1
CC130	D1
CG001	F1
CG002	F1
CG003	E1
CG004	E1
CG009	F1
CG010	E1
CG012	D3
CQ011	D3
CS001	B1
CS003	B1
CS012	B1
CS016	B1
CS030	B1
CS031	C1
CS066	B1
CS101	F4
CS102	F4
CS103	F4
CS104	F4
CS109	F3
CS112	F4
CS116	F4
CS121	F4
CS122	F4
CS123	F4
CS124	F4
CS132	F4
CT010	C1
CT012	A4
CT013	A4
CT014	A4
CT020	C2
CT021	D2
CT022	D2
CT023	D2
CT100	B4
CT102	A4
CT103	A4
CT104	A4
CT105	A4
CT106	B4
CT107	B3
CT109	A4
CT111	B4
CT112	B3
CT114	B3
CT119	A3
CT120	E3
CT121	C2
CT123	B4
CT125	B4
CT126	B4
CT127	D3
CT128	D3
CT129	C2
CT131	C2
CT132	C2
CT134	C2
CT135	B2
CT137	B2
CT138	B2
CT139	B4
CT141	A3
CT142	A3
CT146	C4
CT150	C2
CT200	A2
CT203	D4
CT204	A2
CT213	B3

CT215	B3
CV003	D1
CV004	E1
CV005	E1
CV010	D1
CV012	E1
CV015	E1
CV016	E1
CV018	E1
CV020	E1
CV021	E1
CV022	E1
CV023	E1
CV024	E1
CV025	E1
CV026	E1
CV030	E1
CV031	E1
CV032	E1
CV033	E2
CV035	D1
CV036	E1
CV038	E2
CV039	E2
CV040	E2
CV041	E2
CV043	E1
CV044	E2
CV046	E2
CV047	E1
CV048	D2
CV049	D2
CV051	D1
CV054	D1
CV055	D1
CV056	D1
CV058	D1
CV070	E2
CV071	D2
CV072	E2
CV073	E2
CV074	E2
CV075	E2
CV077	E2
CV079	D2
CV080	E2
CV081	E2
CV082	E2
CV090	E2
CV091	F2
CV099	F2
CV100	F1
CV101	F1
CV102	E1
CV104	E1
CV104	F1
CV106	F2
CV107	E2
CV108	E2
CV110	F2
CV111	E1
CV112	F2
CV113	F2
CV114	F2
CV115	E1
CV116	E1
CV117	F1
CV118	F1
CV122	D1
CV123	D1
CV131	D2
CV132	F2
CV136	C2
CV200	E2
CW002	A3
CW003	A3
CW004	A2
CW007	A1
CW007	A1
CZ002	F1
CZ004	F1
CZ005	F3
CZ007	E3
CZ008	E3
CZ013	F2
CZ016	F2
CZ017	F2
CZ019	F3
CZ021	F2
CZ034	F1
CZ035	F1
CZ036	F2

CZ055	F3
CZ056	F3

DT101	D3
DT106	C2
DT200	A2
DT201	A2
DV038	E2
DV039	E2
DV132	D1
DV136	D2
DV137	D2
DW002	B1
DW005	B1
DW006	B1
DZ001	F1

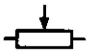


IT004	D3

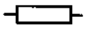
JC007	E3
JC008	C1
JC014	C1
JG005	A4
JG007	D1
JG020	A1
JG036	F3
JS007	C1
JS009	C1
JS012	C1
JS017	B1
JS019	B2
JS020	B2
JS021	B2
JS026	E1
JS027	B1
JS037	C1
JS039	B1
JS042	C1
JS045	B1
JS051	D1
JS102	F4
JS104	F4
JS109	F4
JS113	F3
JS122	F3
JS123	F3
JS125	E1
JS126	F4
JT004	B3
JT006	B2
JT018	B3
JT032	C2
JT044	C3
JT070	A4
JT083	E4
JT099	C2
JT109	C4
JT111	B2
JT115	A3
JT127	D3
JT129	C2
JT130	C2
JT155	B3
JT156	B3
JT164	A4
JT169	B3
JT172	A4
JT176	B3
JT182	A4
JT183	A4
JT185	B2
JT192	A2
JT206	B3
JT206	B3
JT207	B2

JT214	A3
JT221	A1
JT222	A1
JT223	A1
JT224	D4
JT226	F3
JV004	F3
JV005	E1
JV010	E3
JV016	D1
JV019	E1
JV024	C1
JV026	D1
JV043	D2
JV044	E2
JV049	D1
JV054	D2
JV100	E1
JV130	D1
JV136	D2
JV139	E2
JV140	E2
JV142	D1
JV145	D2
JV203	D2
JV204	D1
JV205	D2
JW004	B2
JW006	A1
JW016	A1
JW017	A1
JW030	A1
JW09	A1
JZ003	F1
JZ011	F1
JZ012	F1
JZ029	C1
JZ040	F3
JZ042	F1
JZ045	A1
JZ054	F3
JZ069	F3
JZ074	F3
JZ075	F3
JZ076	F3

LZ002	F1



PV136	D1



RC102	C1
RC108	E3
RC111	C1
RC112	C1
RC113	C1
RC114	C1
RC115	D1
RC116	D1
RC117	C1
RC118	D1
RC122	C1
RC130	D1
RC131	D1
RC132	D1
RC133	D1
RG009	D4
RG011	D3
RG102	D3
RS002	B1
RS003	B1
RS004	B1
RS006	B1
RS008	B1
RS010	B1
RS011	B1
RS012	B1
RS013	B1
RS014	B1

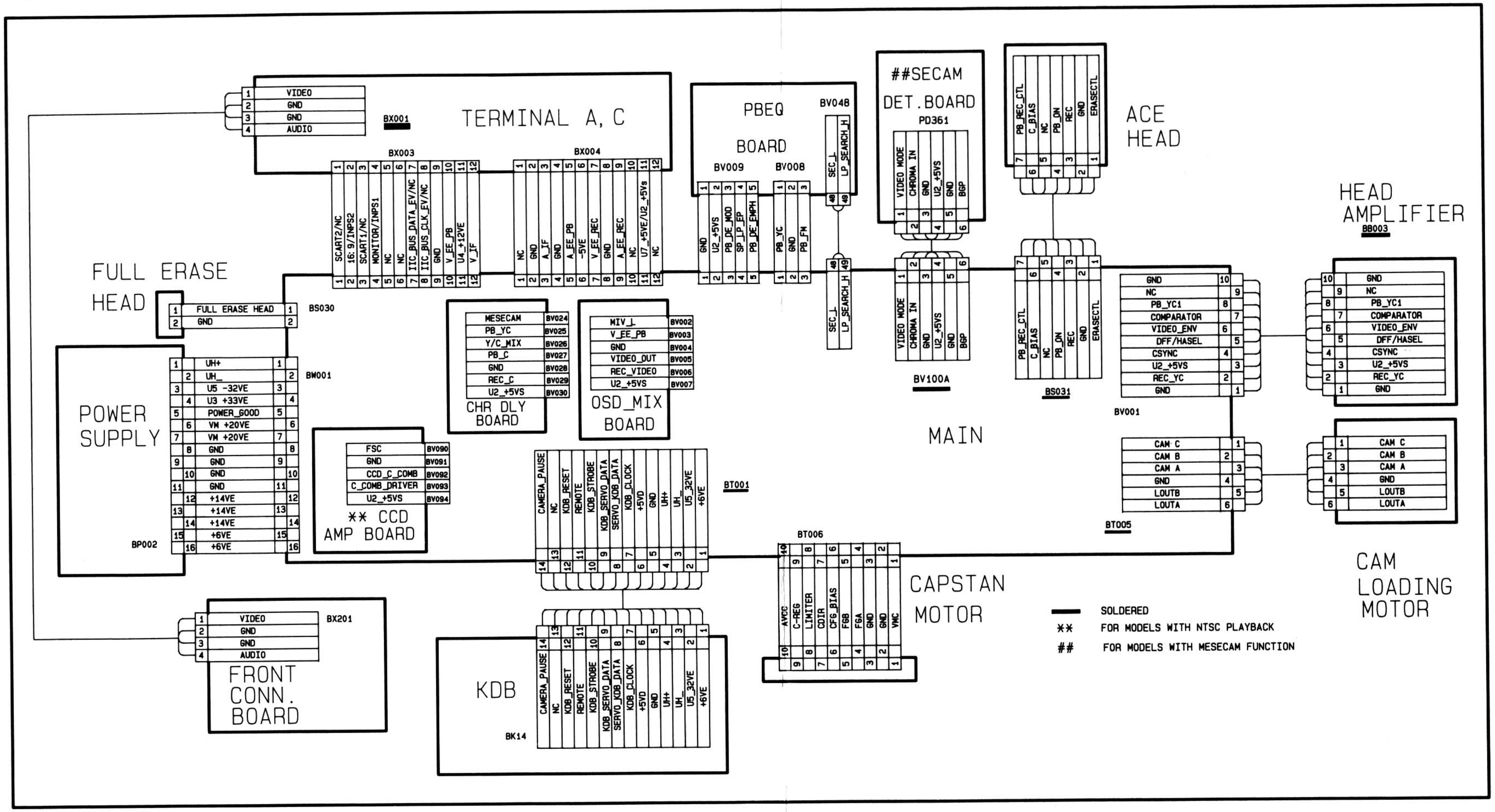
RS015	B1
RS016	B1
RS017	B1
RS019	B1
RS023	B1
RS025	A1
RS026	D1
RS029	B1
RS030	B1
RS031	C1
RS036	C1
RS039	C1
RS040	C1
RS042	C1
RS043	C1
RS044	B1
RS101	F4
RS102	F4
RS103	F4
RS104	F4
RS105	F4
RS106	F4
RS112	F4
RS113	E4
RS114	E4
RS115	E4
RS116	E4
RS119	F4
RS120	F4
RS121	F4
RS122	F4
RS130	F3
RS135	F4
RS301	F4
RS902	F4
RS903	F4
RS904	F3
RT016	C1
RT017	B2
RT020	B2
RT021	B2
RT075	B4
RT100	C3
RT101	C3
RT103	B4
RT105	A4
RT107	B3
RT108	B4
RT109	B3
RT110	B3
RT111	B3
RT112	B3
RT113	B3
RT114	D3
RT116	B4
RT124	C3
RT125	C3
RT126	D4
RT127	C4
RT128	A3
RT130	C3
RT131	C2
RT132	C2
RT133	C2
RT134	C2
RT136	C2
RT137	C2
RT142	D3
RT143	D3
RT144	C3
RT147	B2
RT148	C2
RT149	C2
RT150	C2
RT151	C2
RT152	C2
RT153	C2
RT155	B2
RT156	B2
RT157	B2
RT159	A3
RT160	A4
RT162	B2
RT164	B2
RT165	B2
RT167	D3
RT168	D3
RT169	D3
RT170	C3
RT171	B2
RT176	A3
RT178	D4

RT179	E3
RT180	E3
RT181	B2
RT182	B2
RT200	A2
RT201	A2
RT202	A2
RT204	C3
RT212	D3
RT214	D3
RV001	D1
RV004	E1
RV005	D1
RV011	D1
RV017	E1
RV019	E1
RV022	E1
RV023	E1
RV025	E2
RV026	E1
RV028	E2
RV030	E1
RV031	E1
RV032	D1
RV034	E2
RV036	E3
RV037	E1
RV038	E2
RV039	E2
RV040	E2
RV041	E2
RV042	E1
RV044	E2
RV045	E2
RV046	E1
RV047	D2
RV048	E2
RV049	D2
RV050	E2
RV051	D2
RV052	E2
RV053	D1
RV053	E2
RV054	D1
RV055	D1
RV056	D1
RV070	E2
RV071	D2
RV074	E2
RV080	E2
RV081	E2
RV082	E2
RV083	E2
RV085	E2
RV090	E2
RV099	F1
RV100	F2
RV101	F1
RV102	F2
RV103	F2
RV104	F2
RV105	F2
RV106	E2
RV107	F2
RV108	E2
RV109	F2
RV110	E2
RV111	E1
RV113	E1
RV114	E1
RV115	E2
RV116	F2
RV117	F2
RV118	E2
RV119	E2
RV120	D2
RV122	D2
RV126	D1
RV129	D1
RV131	D1
RV132	D1
RV133	D2
RV134	D2
RV135	D2
RV136	D2
RV137	D2
RV139	D2
RV200	E2
RV901	C2
RV902	C1
RW002	A2
RW005	A3

RW006	A3
RW008	A1
RW009	A1
RW010	B1
RW011	A1
RW011	A1
RW019	B1
RW020	B1
RW025	A2
RW027	A1
RW028	A1
RW029	A1
RW030	A1
RZ007	E3
RZ008	E3
RZ030	F2
RZ031	F1
RZ033	F1
RZ034	F2
RZ036	F1
RZ036	F2
RZ037	F1
RZ050	F3
RZ051	F3
RZ052	F3
RZ053	F3
RZ055	F1
RZ056	F3
RZ060	F1

TC109	E3
TC110	D3
TC112	C2
TC130	D1
TS030	C1
TS038	B1
TS039	C1
TS040	B1
TT100	C3
TT101	B3
TT102	B4
TT103	D3
TT104	B3
TT106	C2
TT107	C2
TT109	B2
TT110	B2
TV022	E1
TV029	D1
TV035	E3
TV036	E2
TV037	E2
TV038	E2
TV039	E2
TV040	E2
TV041	E2
TV044	E2
TV045	D2
TV046	D2
TV047	E2
TV052	D1
TV081	E2
TV105	F2
TV106	F2
TV107	E2
TV111	E1
TV112	E1
TV130	D2
TV131	D2
TV137	D2
TV200	E2
TV201	E2
TW001	A1
TW002	A1
TW006	A2
TW008	A2
TZ001	F3
TZ019	F3
TZ031	F2
TZ032	F1
TZ050	F3
TZ051	F3
TZ055	F3
TZ056	F3
TZ057	F1

Wiring diagram • Schéma d'interconnexions • Verdrahtungsplan
Diagramma delle interconnessioni • Esquema de interconexiones


TERMINAL A, C
BX001
VIDEO
GND
GND
AUDIO
BX003
SCART2/NC
16: 9/INPS2
SCART1/NC
MONITOR/INPS1
NC
NC
IIC_BUS_DATA_EV/NC
IIC_BUS_CLK_EV/NC
GND
V_EE_PB
U4_+12VE
V_IF
BX004
NC
GND
A_IF
GND
A_EE_PB
-5VE
V_EE_REC
GND
A_EE_REC
NC
U7_+5VE/U2_+5Vs
NC
PBEQ BOARD
BV048
SEC_⊥
LP_SEARCH_H
BV009
GND
U2_+5VS
PB_DE_MOD
SP_LP_EP
PB_DE_EMPH
BV008
PB_YC
GND
PB_FM
##SECAM DET.BOARD
PD361
VIDEO MODE
CHROMA IN
GND
U2_+5VS
GND
BGP
BV100A
ACE HEAD
PB_REC_CTL
C_BIAS
NC
PB_ON
REC
GND
ERASECTL
BS031
HEAD AMPLIFIER
BB003
GND
NC
PB_YC1
COMPARATOR
VIDEO_ENV
DFF/HASEL
CSYNC
U2_+5VS
REC_YC
GND
BV001
MAIN
CAM C
CAM B
CAM A
GND
LOUTB
LOUTA
BT005
CAM LOADING MOTOR
FULL ERASE HEAD
FULL ERASE HEAD
GND
BS030
POWER SUPPLY
BP002
BW001
UH+
UH_
U5 -32VE
U3 +33VE
POWER_GOOD
VM +20VE
VM +20VE
GND
GND
GND
GND
+14VE
+14VE
+14VE
+6VE
+6VE
CHR DLY BOARD
MESECAM
PB_YC
Y/C_MIX
PB_C
GND
REC_C
U2_+5VS
BV024
BV025
BV026
BV027
BV028
BV029
BV030
OSD_MIX BOARD
MIV_⊥
V_EE_PB
GND
VIDEO_OUT
REC_VIDEO
U2_+5VS
BV002
BV003
BV004
BV005
BV006
BV007
** CCD AMP BOARD
FSC
GND
CCD_C_COMB
C_COMB_DRIVER
U2_+5VS
BV090
BV091
BV092
BV093
BV094
BT001
CAMERA_PAUSE
NC
KDB_RESET
REMOTE
KDB_STROBE
KDB_SERVO_DATA
SERVO_KDB_DATA
KDB_CLOCK
+5VD
GND
UH+
UH_
U5_32VE
+6VE
KDB
BK14
BT006
AVCC
C-REG
LIMITER
CDIR
CFG_BIAS
FGB
FGA
GND
GND
VMC
CAPSTAN MOTOR
FRONT CONN. BOARD
BX201
VIDEO
GND
GND
AUDIO

▬ SOLDERED

** FOR MODELS WITH NTSC PLAYBACK

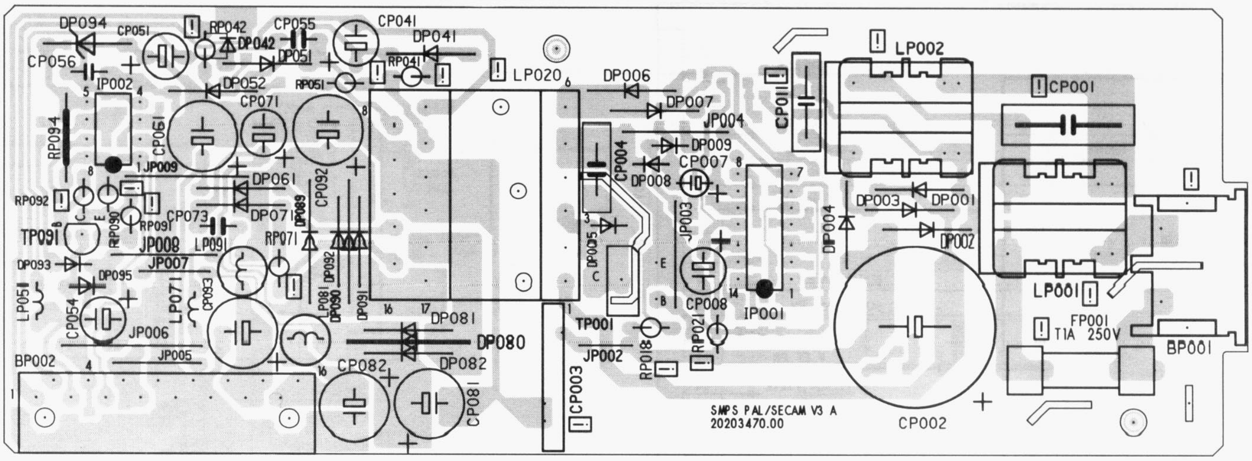
FOR MODELS WITH MESECAM FUNCTION

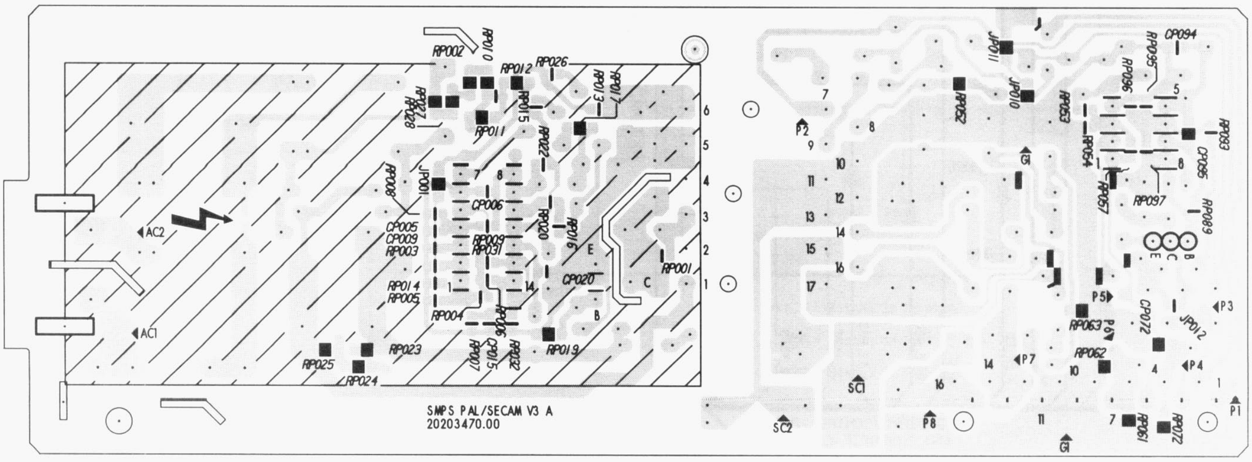
Note: For some sets, the front connection board is integrated on the key display board. In this case, the wire connection from terminal board (BX001) is connected to the key display board.

Note: Sur certains appareils, la platine FCB est intégrée dans la platine de commandes (KDB). Dans ce cas le connecteur BX001 de la platine prises scart est relié directement à la platine KDB.

Hinweis: Bei einigen Geräten ist die Front-Anschlußplatte auf dem Key Display Board integriert. Ist dies der Fall, wird die Verbindungsleitung von der Scartanschlußplatte (BX001) direkt zum Key Display Board geführt.

Power supply P.C.B. • Circuit imprimé de la platine alimentation • Netzteil Leiterplatte Piastra alimentazione • Platina alimentación

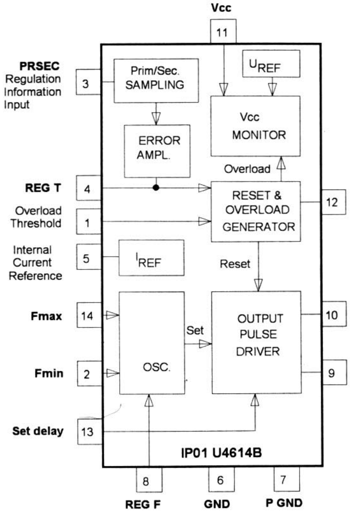

DP094
CP051
RP042
CP055
CP041
DP041
CP056
DP042
DP051
RP041
LP020
DP006
IP002
DP052
RP051
CP071
DP007
JP004
RP094
CP061
JP009
DP009
CP007
CP004
DP008
RP092
DP061
CP092
DP071
DP089
CP073
RP091
RP090
TP091
JP008
LP091
RP071
DP093
JP007
DP095
LP051
CP054
LP071
CP093
JP006
DP081
DP080
DP082
CP082
CP081
BP002
JP005
DP035
TP001
JP002
RP018
RP021
CP008
IP001
JP003
CP003
CP011
LP002
CP001
DP003
DP001
DP002
DP004
LP001
FP001
T1A 250V
BP001
CP002
SMPS PAL/SECAM V3 A
20203470.00


RP002
RP010
RP012
RP026
RP028
RP015
RP013
RP017
RP011
RP022
RP008
JP001
CP006
CP005
CP009
RP003
RP009
RP031
RP020
RP016
RP001
CP020
RP014
RP005
RP004
RP006
CP015
RP032
RP007
RP019
RP023
RP025
RP024
AC2
AC1
SMPS PAL/SECAM V3 A
20203470.00
P2
JP011
RP052
JP010
RP053
RP054
G1
RP057
CP094
RP095
RP096
RP093
CP095
RP097
RP089
P5
RP063
CP072
RP012
P3
RP062
P4
P7
SC1
SC2
P8
P1
RP061
RP072

Wichtiger Hinweis!
Service-Arbeiten am SM-Netzteil nur über Regeltrenntrafo durchführen.
Alle Spannungen und Oszillogramme auf der Primärseite des Netzteils gegen Primärmasse messen!
Wenn nicht anders angegeben, sind die Gleichspannungen und Oszillogramme im STOP-Betrieb gemessen.

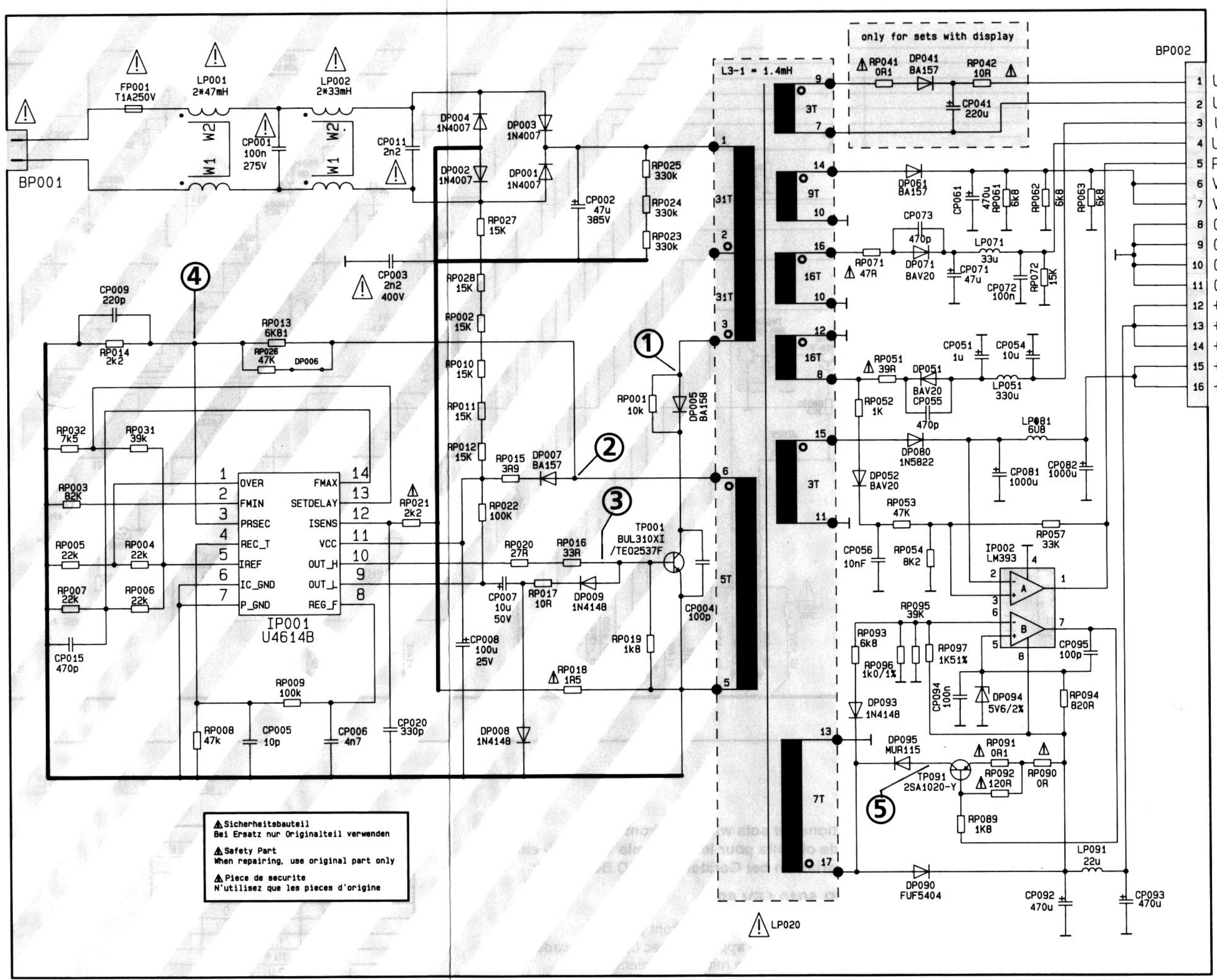
Important note!
Repairs on SM line section are to be carried out only with isolating transformer.
Measure all volltages and oscillograms on the primary side of the line section against primary line section ground!
If not otherwise noted, all DC-voltages and oscillograms are measured during STOP mode.

Note importante !
N´effectuer les travaux de maintenance sur la partie reliée au secteur(switch mode) qu´au travers d´un transformateur d´isolement.
Utiliser la masse primaire pour mesurer les tensions et les oscillogrammes de la partie reliée au secteur les tensions continues et les oscillogrammes sont relevés en mode STOP, sauf indication contraire.


Vcc
11
PRSEC
Regulation Information Input
3
Prim/Sec. SAMPLING
U_REF
Vcc MONITOR
ERROR AMPL.
Overload
RESET & OVERLOAD GENERATOR
12
Isens
Detection of Collector Current of TP001
REG T
4
Overload Threshold
1
Internal Current Reference
5
I_REF
Reset
Fmax
14
Fmin
2
OSC.
Set
OUTPUT PULSE DRIVER
10
Out H
9
Out L
Set delay
13
IP01 U4614B
8
REG F
6
GND
7
P GND

POWER SUPPLY		MODE		
LOC	PIN	EE	PLAY	REC
IP001	1	1.7	1.7	1.7
	2	2.9	2.9	2.9
	3	0	0	0
	4	1.9	1.9	1.9
	5	3.4	3.3	3.3
	6	0	0	0
	7	0	0	0
	8	1.9	1.8	1.8
	9	0.8	0.8	0.8
	10	-3.6	-3.6	-3.6
	11	8.3	8.3	8.3
	12	0	0	0
	13	0.5	0.4	0.4
	14	1.7	1.6	1.5
IP002	1	5.2	5.1	5.1
	2	6.1	6.1	6.1
	3	15.4	15.3	15.3
	4	0	0	0
	5	5.5	5.5	5.5
	6	4.8	4.8	4.8
	7	11.2	11.2	11.2
	8	13.9	13.8	13.8
TP091	E	13.9	13.9	13.9
	B	13.8	13.8	13.8
	C	-14.6	-14.6	-14.6
TP001	E	0	0	0
	B	-3.9	-3.9	-3.9
	C	293.8	293.1	293.1
CP061	+	20.2	20.8	20.5
CP071	+	36.06	33.51	33.61
CP081	+	6.38	6.24	6.26

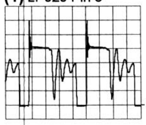
Power supply • Alimentation • Netzteil
Alimentazione • Alimentación


BP001
FP001
T1A250V
LP001
2*47mH
CP001
100n
275V
LP002
2*33mH
CP011
2n2
DP004 1N4007
DP003 1N4007
DP002 1N4007
DP001 1N4007
CP002
47u
385V
RP025 330k
RP024 330k
RP023 330k
RP027 15K
CP003
2n2
400V
CP009
220p
④
RP013
6K81
RP014
2k2
RP026
47K
DP006
RP028 15K
RP002 15K
RP010 15K
RP011 15K
RP012 15K
RP015 3R9
DP007 BA157
②
①
RP001 10k
DP005 BA158
③
RP032 7k5
RP031 39k
RP003 82K
RP005 22k
RP004 22k
RP007 22k
RP006 22k
CP015 470p
OVER
FMIN
PRSEC
REC_T
IREF
IC_GND
P_GND
FMAX
SETDELAY
ISENS
VCC
OUT_H
OUT_L
REG_F
IP001
U4614B
RP021 2k2
RP022 100K
RP020 27R
RP016 33R
TP001
BUL310XI
/TE02537F
CP007 10u 50V
RP017 10R
DP009 1N4148
CP004 100p
CP008 100u 25V
RP019 1k8
RP018 1R5
RP009 100k
RP008 47k
CP005 10p
CP006 4n7
CP020 330p
DP008 1N4148
L3-1 = 1.4mH
3T
9T
16T
31T
5T
7T
only for sets with display
RP041 0R1
DP041 BA157
RP042 10R
CP041 220u
DP061 BA157
CP061 470u
RP061 6K8
RP062 6K8
RP063 6K8
CP073 470p
RP071 47R
DP071 BAV20
CP071 47u
LP071 33u
CP072 100n
RP072 15K
RP051 39R
DP051 BAV20
CP055 470p
CP051 1u
CP054 10u
LP051 330u
RP052 1K
DP080 1N5822
LP081 6U8
DP052 BAV20
CP081 1000u
CP082 1000u
RP053 47K
CP056 10nF
RP054 8K2
IP002 LM393
RP057 33K
RP095 39K
RP093 6K8
RP096 1K0/1%
RP097 1K51%
CP094 100n
DP094 5V6/2%
CP095 100p
RP094 820R
DP093 1N4148
DP095 MUR115
RP091 0R1
TP091 2SA1020-Y
⑤
RP092 120R
RP090 0R
RP089 1K8
LP091 22u
DP090 FUF5404
CP092 470u
CP093 470u
LP020
BP002
1 UH+
2 UH-
3 U5_-32VE
4 U3_+33VE
5 POWER_GOOD
6 VM_+20VE
7 VM_+20VE
8 GND
9 GND
10 GND
11 GND
12 +14VE
13 +14VE
14 +14VE
15 +6VE
16 +6VE
Sicherheitsbauteil
Bei Ersatz nur Originalteil verwenden
Safety Part
When repairing, use original part only
Piece de securite
N'utilisez que les pieces d'origine

▨

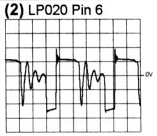
Part of board connected to mains supply.
Partie du chassis relié au secteur.
Primärseite des Netzteils.

(1) LP020 Pin 3



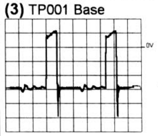
V: 100V/Div
H: 5µs/Div

(2) LP020 Pin 6



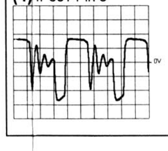
V: 10V/Div
H: 5µs/Div

(3) TP001 Base



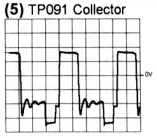
V: 2V/Div
H: 5µs/Div

(4) IP001 Pin 3



V: 2V/Div
H: 5µs/Div

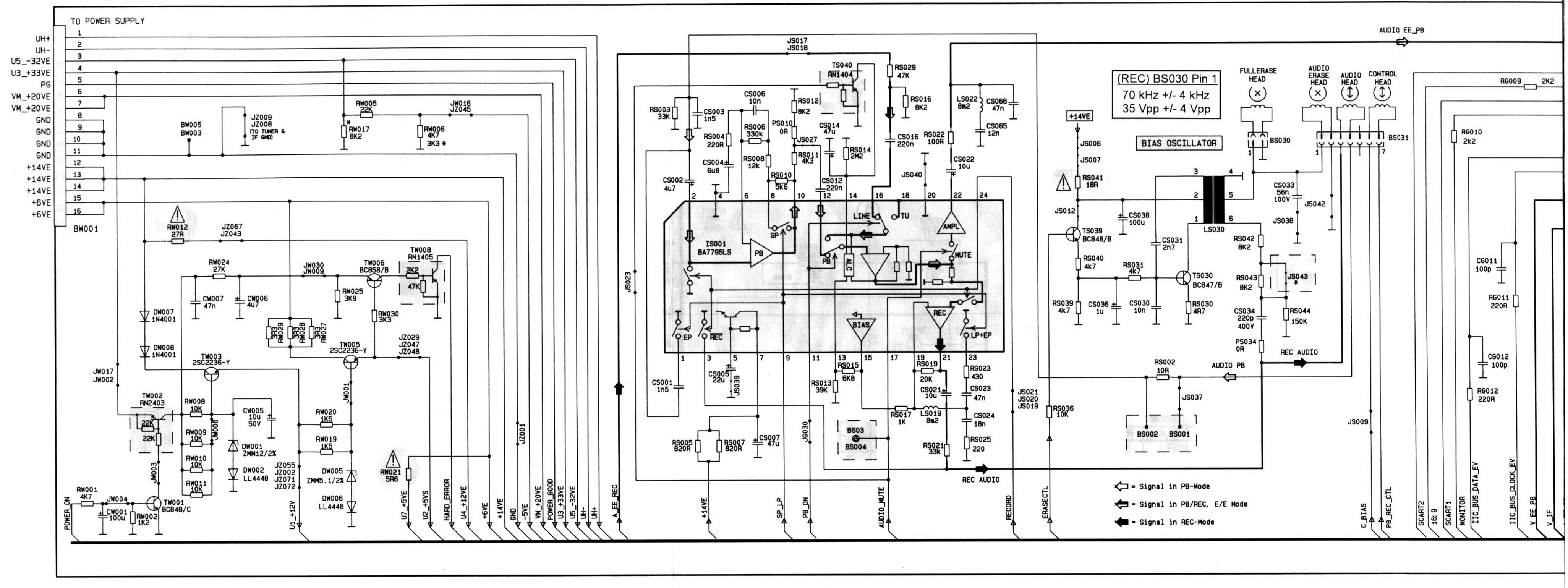
(5) TP091 Collector



V: 10V/Div
H: 5µs/Div

Power supply interface • Interface alimentation • Netzteil Interface
Platine interfaccia alimentazione • Platina interfaz alimentación

Audio signal processing • Schéma des circuits audio • Audio Signalverarbeitung
Elaborazione audio • Tratamiento audio


TO POWER SUPPLY
UH+
UH-
U5_-32VE
U3_+33VE
PG
VM_+20VE
VM_+20VE
GND
GND
GND
GND
+14VE
+14VE
+14VE
+6VE
+6VE
BW001
BW005
BW003
JZ009
JZ008
(TO TUNER & IF GND)
RW005 22K
RW017 8K2
JW016 JZ045
RW006 4K7 3K3 *
RW012 27R
JZ067 JZ043
RW024 27K
CW007 47n
CW006 4u7
JW030 JW009
TW006 BC858/B
TW008 RN1405
RW025 3K9
RW030 3K3
DW007 1N4001
DW008 1N4001
TW003 2SC2236-Y
TW005 2SC2236-Y
JZ029 JZ047 JZ048
JW017 JW002
TW002 RN2403
RW008 10K
CW005 10u 50V
RW020 1K5
RW019 1K5
RW009 10K
RW010 10K
RW011 10K
DW001 ZMM12/2%
DW002 LL4448
JZ055 JZ002 JZ071 JZ072
DW005 ZMM5.1/2%
DW006 LL4448
RW021 5R6
RW001 4K7
JW004
CW001 100u
RW002 1K2
TW001 BC848/C
JW003
JW006
JZ001
POWER_ON
U1_+12V
U7_+5VE
U2_+5VS
HARD_ERROR
U4_+12VE
+6VE
+14VE
GND
-5VE
VM_+20VE
POWER_GOOD
U3_+33VE
U5_-32VE
UH-
UH+
A_EE_REC
JS023
JS017 JS018
TS040 RN1404
RS029 47K
RS016 8K2
RS003 33K
CS003 1n5
CS006 10n
RS012 8K2
RS006 330k
PS010 0R
CS014 47u
LS022 8m2
CS066 47n
CS065 12n
RS004 220R
RS008 12k
JS027
RS011 4K3
RS014 2M2
CS016 220n
RS022 100R
CS022 10u
CS004 6u8
CS002 4u7
RS010 5K6
CS012 220n
JS040
IS001 BA7795LS
PB
LINE
TU
AMPL
MUTE
ALC
SP
BIAS
REC
EP
LP+EP
CS001 1n5
CS005 22u
JS039
RS013 39K
RS015 6K8
RS019 20K
CS021 10u
RS023 430
CS023 47n
RS017 1K
LS019 8m2
CS024 18n
RS025 220
RS021 33k
RS005 820R
RS007 820R
CS007 47u
JG030
BS03
BS004
JS021 JS020 JS019
RS036 10K
REC AUDIO
+14VE
SP_LP
PB_ON
AUDIO_MUTE
RECORD
ERASECTL
(REC) BS030 Pin 1
70 kHz +/- 4 kHz
35 Vpp +/- 4 Vpp
BIAS OSCILLATOR
+14VE
JS006
JS007
RS041 18R
JS012
CS038 100u
TS039 BC848/B
RS040 4K7
CS031 2n7
LS030
RS031 4K7
TS030 BC847/B
RS039 4K7
CS036 1u
CS030 10n
RS030 4R7
RS042 8K2
RS043 8K2
JS043 *
CS034 220p 400V
RS044 150K
PS034 0R
RS002 10R
AUDIO PB
REC AUDIO
JS037
BS002
BS001
FULLERASE HEAD
AUDIO ERASE HEAD
AUDIO HEAD
CONTROL HEAD
BS030
BS031
CS033 56n 100V
JS042
JS038
AUDIO EE_PB
RG009 2K2
RG010 2k2
CG011 100p
RG011 220R
CG012 100p
RG012 220R
JS009
= Signal in PB-Mode
= Signal in PB/REC, E/E Mode
= Signal in REC-Mode
C_BIAS
PB_REC_CTL
SCART2
16:9
SCART1
MONITOR
IIC_BUS_DATA_EV
IIC_BUS_CLOCK_EV
V_EE_PB
V_IF

POWER INTERFACE		MODE		
LOC	**PIN**	**PB**	**REC**	**EE**
TW001	E	0	0	0
	B	1.6	1.6	1.6
	C	1.6	1.6	1.6
TW002	E	32.1	32.1	32.9
	B	1.5	1.5	1.5
	C	32.1	32.1	32.9
TW003	E	11.9	12.0	12.1
	B	12.7	12.7	12.7
	C	12.7	12.6	12.6
TW005	E	5.1	5.1	5.1
	B	5.8	5.8	5.8
	C	5.7	5.7	5.7
TW006	E	4.2	4.2	4.2
	B	5.1	5.1	5.1
	C	0	0	0
TW008	E	0	0	0
	B	0	0	0
	C	4.9	4.9	4.9

Circuit variations for sets with LED front panel:
Différences de circuits pour les appareils avec LED en facade:
Schaltungsvarianten bei Geräten mit LED Bedienteil:

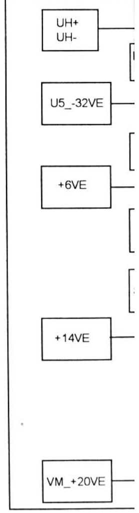
VR 5020 / VR 5040 / FV 80 B

RW006 : 3k3	for sets with LED front panel pour les appareils avec LED en facade für Geräte mit LED Bedienteil
RW017 : 8k2	inserted only for sets with LED front panel insérée uniquement pour les appareils avec LED en facade nur bei Geräten mit LED Bedienteil bestückt.

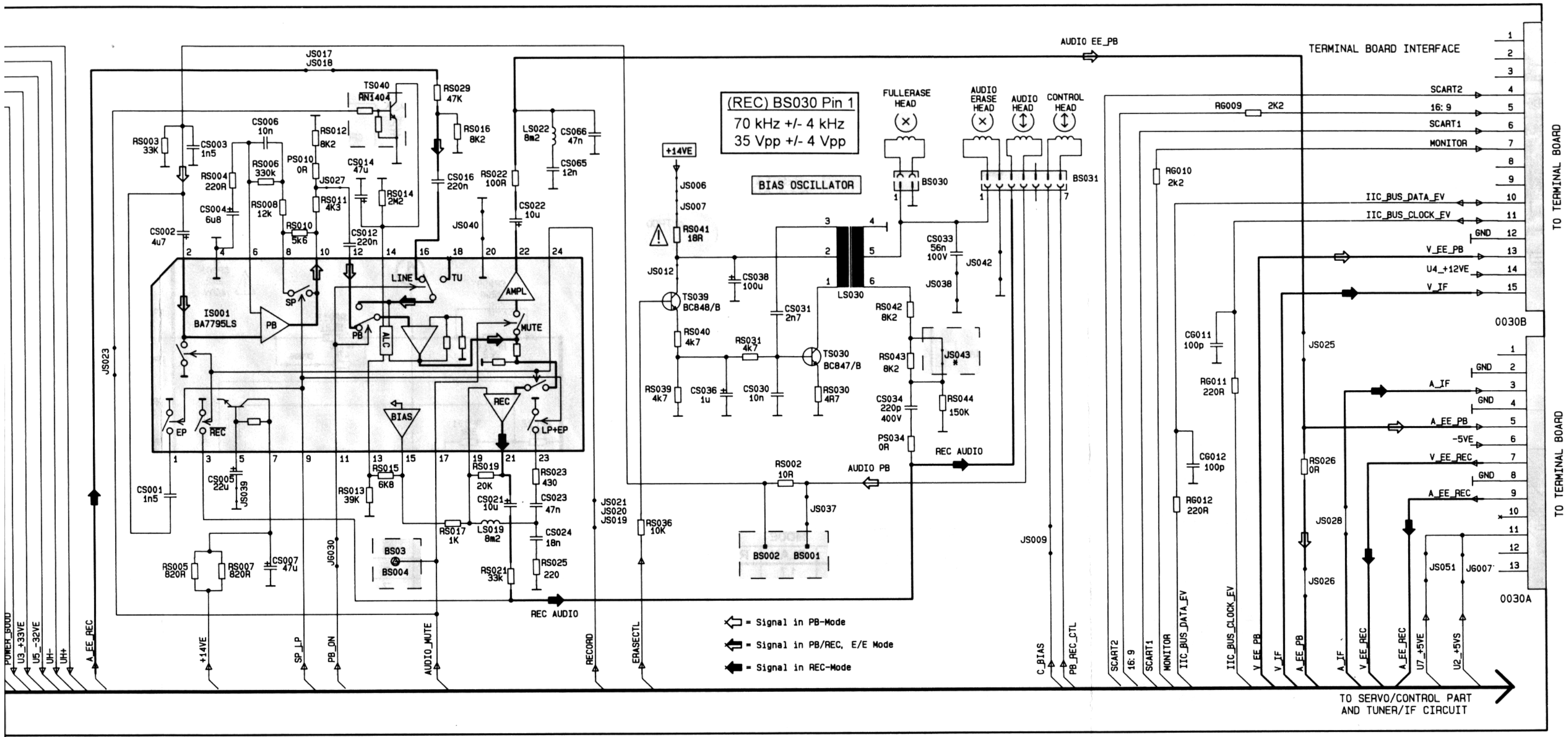
AUDIO		MODE		
LOC	**PIN**	**PB**	**REC**	**EE**
IS001	1	0	0	
	2	1.9	1.9	
	3	0	0	
	4	0	0	
	5	10.5	11.1	
	6	1.9	1.9	
	7	10.6	11.2	
	8	2.0	2.0	
	9	0	0	
	10	2.0	2.0	
	11	4.7	0	
	12	4.8	5.1	
	13	4.2	4.4	
	14	0	0.2	
	15	4.9	5.2	
	16	4.9	5.1	
	17	0	0	
	18	4.9	5.2	
	19	4.9	5.2	
	20	0	0	
	21	4.9	5.3	
	22	5.0	5.2	
	23	0	0	
	24	0	4.7	

AUDIO		MODE		
LOC	**PIN**	**PB**	**REC**	**EE**
TS030	E	0	0	
	B	0	0	
	C	14.4	13.8	
TS038	E	0	0	
	B	4.7	0	
	C	0	0	
TS039	E	0	4.0	
	B	0	0	
	C	14.0	14.0	
TS040	E	0	0	
	B	0	0	
	C	0	0	

Voltage Distrib


UH+
UH-
U5_-32VE
+6VE
+14VE
VM_+20VE

Audio signal processing • Schéma des circuits audio • Audio Signalverarbeitung
Elaborazione audio • Tratamiento audio


JS017
JS018
TS040
RN1404
RS029 47K
RS016 8K2
RS003 33K
CS003 1n5
CS006 10n
RS012 8K2
RS004 220R
RS006 330k
PS010 0R
JS027
CS014 47u
RS014 2M2
RS008 12k
RS011 4K3
CS004 6u8
RS010 5k6
CS002 4u7
CS012 220n
CS016 220n
RS022 100R
LS022 8m2
CS066 47n
CS065 12n
CS022 10u
JS040
LINE
TU
AMPL
MUTE
SP
PB
ALC
IS001
BA7795LS
BIAS
REC
EP
LP+EP
JS023
CS001 1n5
CS005 22u
JS039
RS005 820R
RS007 820R
CS007 47u
JG030
RS013 39K
RS015 6K8
BS03
BS004
RS019 20K
CS021 10u
RS017 1K
LS019 8m2
RS021 33k
RS023 430
CS023 47n
CS024 18n
RS025 220
REC AUDIO
JS021
JS020
JS019
RS036 10K
POWER_GOOD
U3_+33VE
U5_-32VE
UH-
UH+
A_EE_REC
+14VE
SP_LP
PB_ON
AUDIO_MUTE
RECORD
ERASECTL
(REC) BS030 Pin 1
70 kHz +/- 4 kHz
35 Vpp +/- 4 Vpp
+14VE
JS006
JS007
RS041 18R
BIAS OSCILLATOR
JS012
TS039 BC848/B
CS038 100u
CS031 2n7
LS030
RS040 4k7
RS031 4k7
TS030 BC847/B
RS039 4k7
CS036 1u
CS030 10n
RS030 4R7
FULLERASE HEAD
BS030
AUDIO ERASE HEAD
AUDIO HEAD
CONTROL HEAD
BS031
CS033 56n 100V
JS042
JS038
RS042 8K2
RS043 8K2
JS043 *
CS034 220p 400V
RS044 150K
PS034 0R
REC AUDIO
AUDIO PB
RS002 10R
JS037
BS002
BS001
JS009
AUDIO EE_PB
= Signal in PB-Mode
= Signal in PB/REC, E/E Mode
= Signal in REC-Mode
C_BIAS
PB_REC_CTL
TERMINAL BOARD INTERFACE
RG009 2K2
RG010 2k2
SCART2
16: 9
SCART1
MONITOR
IIC_BUS_DATA_EV
IIC_BUS_CLOCK_EV
GND
V_EE_PB
U4_+12VE
V_IF
TO TERMINAL BOARD
0030B
CG011 100p
RG011 220R
CG012 100p
RG012 220R
JS025
RS026 0R
JS028
JS026
A_IF
A_EE_PB
-5VE
V_EE_REC
A_EE_REC
JS051
JG007
U7_+5VE
U2_+5VS
0030A
TO SERVO/CONTROL PART
AND TUNER/IF CIRCUIT

anel:
avec LED en facade:
Bedienteil:

l
) en facade
il

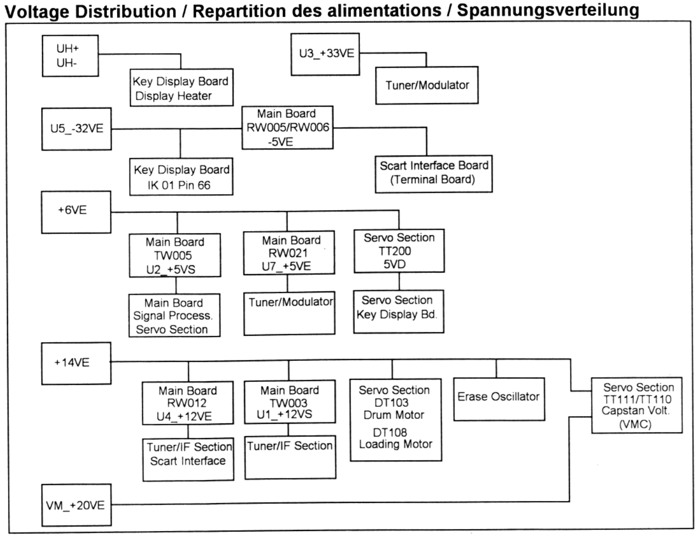
ED front panel
s appareils avec

dienteil bestückt.

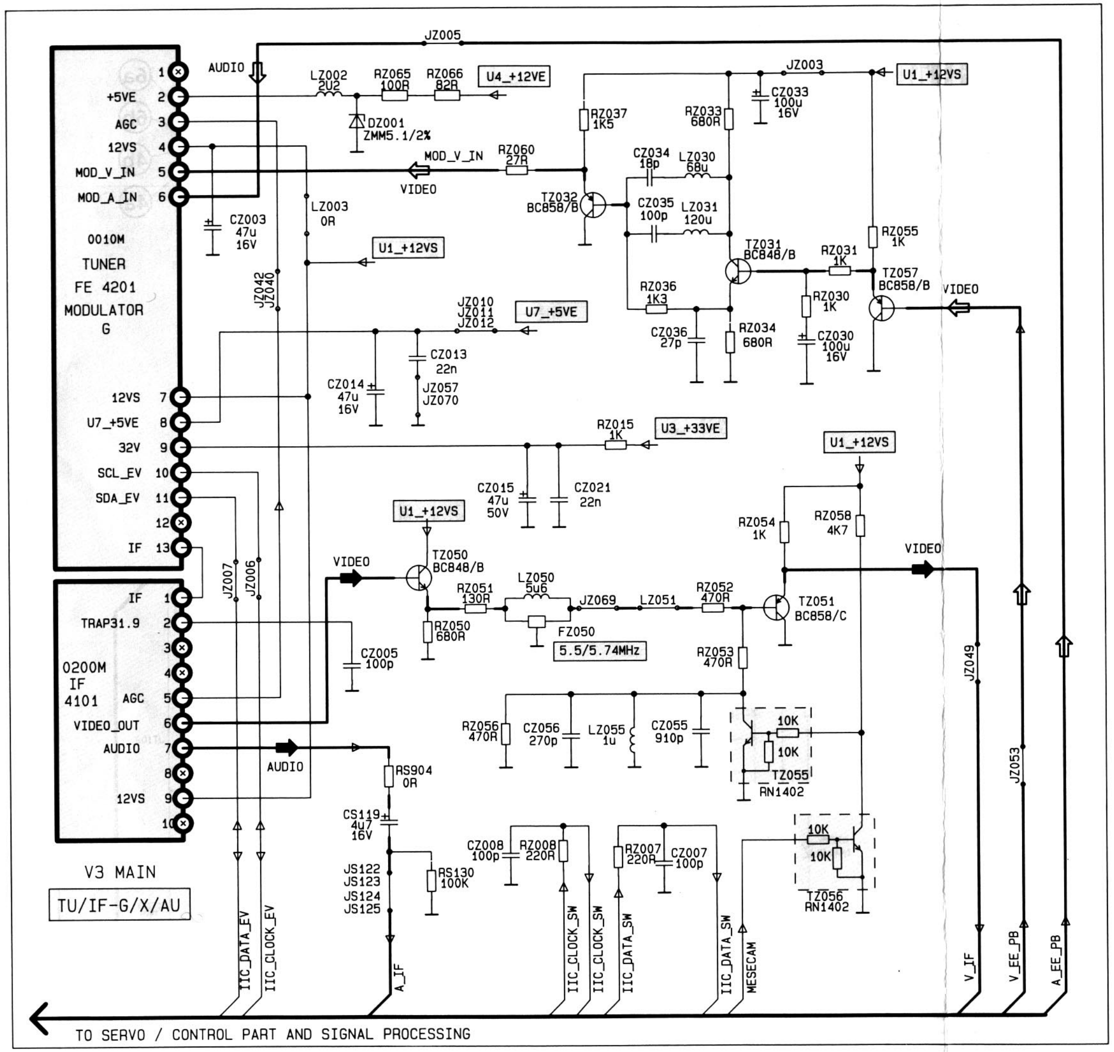
AUDIO		MODE		
LOC	PIN	PB	REC	EE
IS001	1	0	0	
	2	1.9	1.9	
	3	0	0	
	4	0	0	
	5	10.5	11.1	
	6	1.9	1.9	
	7	10.6	11.2	
	8	2.0	2.0	
	9	0	0	
	10	2.0	2.0	
	11	4.7	0	
	12	4.8	5.1	
	13	4.2	4.4	
	14	0	0.2	
	15	4.9	5.2	
	16	4.9	5.1	
	17	0	0	
	18	4.9	5.2	
	19	4.9	5.2	
	20	0	0	
	21	4.9	5.3	
	22	5.0	5.2	
	23	0	0	
	24	0	4.7	

AUDIO		MODE		
LOC	PIN	PB	REC	EE
TS030	E	0	0	
	B	0	0	
	C	14.4	13.8	
TS038	E	0	0	
	B	4.7	0	
	C	0	0	
TS039	E	0	4.0	
	B	0	0	
	C	14.0	14.0	
TS040	E	0	0	
	B	0	0	
	C	0	0	

Voltage Distribution / Repartition des alimentations / Spannungsverteilung


UH+
UH-
Key Display Board
Display Heater
U3_+33VE
Tuner/Modulator
U5_-32VE
Main Board
RW005/RW006
-5VE
Key Display Board
IK 01 Pin 66
Scart Interface Board
(Terminal Board)
+6VE
Main Board
TW005
U2_+5VS
Main Board
RW021
U7_+5VE
Servo Section
TT200
5VD
Main Board
Signal Process.
Servo Section
Tuner/Modulator
Servo Section
Key Display Bd.
+14VE
Main Board
RW012
U4_+12VE
Main Board
TW003
U1_+12VS
Servo Section
DT103
Drum Motor
DT108
Loading Motor
Erase Oscillator
Servo Section
TT111/TT110
Capstan Volt.
(VMC)
Tuner/IF Section
Scart Interface
Tuner/IF Section
VM_+20VE

Tuner/modulator (BG) / IF section (BG) • Tuner/modulateur (BG) / FI (BG) • Tuner/modulator (BG) / ZF (BG) Tuner/modulatore (BG) / FI (BG) • Tuner/modulador (BG) /FI (BG)


0010M
TUNER
FE 4201
MODULATOR
G
+5VE
AGC
12VS
MOD_V_IN
MOD_A_IN
12VS
U7_+5VE
32V
SCL_EV
SDA_EV
IF
0200M
IF
4101
TRAP31.9
AGC
VIDEO_OUT
AUDIO
12VS
V3 MAIN
TU/IF-G/X/AU
AUDIO
JZ005
LZ002 2U2
RZ065 100R
RZ066 82R
U4_+12VE
DZ001 ZMM5.1/2%
MOD_V_IN
RZ060 27R
VIDEO
RZ037 1K5
TZ032 BC858/B
CZ034 18p
LZ030 68u
CZ035 100p
LZ031 120u
RZ033 680R
JZ003
CZ033 100u 16V
U1_+12VS
RZ055 1K
TZ031 BC848/B
RZ031 1K
TZ057 BC858/B
RZ030 1K
CZ030 100u 16V
RZ036 1K3
CZ036 27p
RZ034 680R
CZ003 47u 16V
LZ003 0R
U1_+12VS
JZ042
JZ040
JZ010
JZ011
JZ012
U7_+5VE
CZ013 22n
CZ014 47u 16V
JZ057
JZ070
RZ015 1K
U3_+33VE
U1_+12VS
CZ015 47u 50V
CZ021 22n
U1_+12VS
RZ054 1K
RZ058 4K7
VIDEO
TZ050 BC848/B
RZ051 130R
LZ050 5u6
JZ069
LZ051
RZ052 470R
TZ051 BC858/C
RZ050 680R
FZ050
5.5/5.74MHz
RZ053 470R
JZ007
JZ006
CZ005 100p
RZ056 470R
CZ056 270p
LZ055 1u
CZ055 910p
10K
10K
TZ055
RN1402
AUDIO
RS904 0R
CS119 4u7 16V
JS122
JS123
JS124
JS125
RS130 100K
CZ008 100p
RZ008 220R
RZ007 220R
CZ007 100p
10K
10K
TZ056
RN1402
JZ049
JZ053
IIC_DATA_EV
IIC_CLOCK_EV
A_IF
IIC_CLOCK_SW
IIC_CLOCK_SW
IIC_DATA_SW
IIC_DATA_SW
MESECAM
V_IF
V_EE_PB
A_EE_PB
TO SERVO / CONTROL PART AND SIGNAL PROCESSING

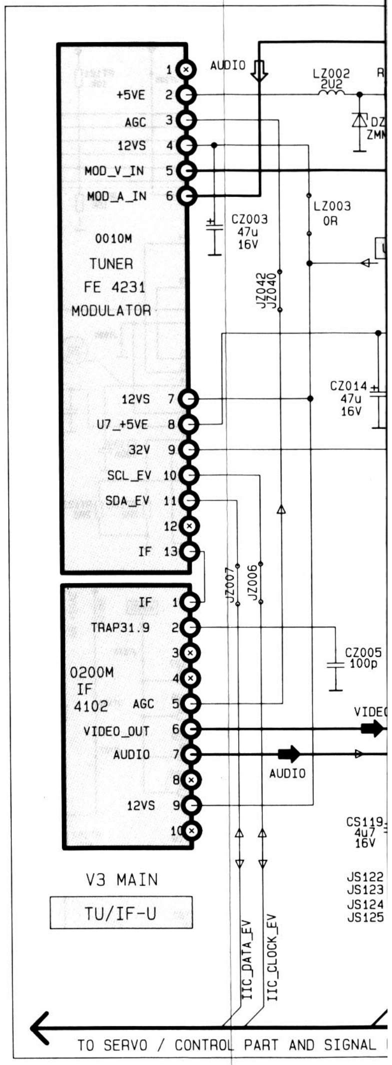
TUNER / IF		MODE		
LOC	PIN	PB	REC	EE
FE4201	1	N.C.	N.C.	N.C.
	2	4.9	5.0	4.9
	3	5.5	5.3	5.5
	4	12.0	12.1	12.0
	5	3.3	3.2	3.2
	6	0	0	0
	7	12.2	12.2	12.2
	8	5.3	5.4	5.3
	9	31.1	31.1	31.1
	10	4.8	4.8	4.8
	11	4.9	4.7	4.9
	12	1.2	0	0
	13	1.9	1.9	1.9
IF4101	1	1.9	1.9	1.9
	2	3.7	3.7	3.7
	3	1.2	1.2	1.2
	4	9.5	9.5	9.5
	5	5.2	5.2	5.2
	6	5.3	5.7	5.7
	7	6.7	6.8	6.8
	8	0	0	0
	9	12.2	12.2	12.2
	10	0	0	0

TUNER / IF		MODE		
LOC	PIN	PB	REC	EE
FE4231	1	N.C.	N.C.	N.C.
	2	4.9	5.0	4.9
	3	5.5	5.3	5.5
	4	12.0	12.1	12.0
	5	3.3	3.2	3.2
	6	0	0	0
	7	12.2	12.2	12.2
	8	5.3	5.4	5.3
	9	31.1	31.1	31.1
	10	4.8	4.8	4.8
	11	4.9	4.7	4.9
	12	1.2	0	0
	13	1.9	1.9	1.9
IF4102	1	1.9	1.9	1.9
	2	3.7	3.7	3.7
	3	1.2	1.2	1.2
	4	9.5	9.5	9.5
	5	5.2	5.2	5.2
	6	5.3	5.7	5.7
	7	6.7	6.8	6.8
	8	0	0	0
	9	12.2	12.2	12.2
	10	0	0	0

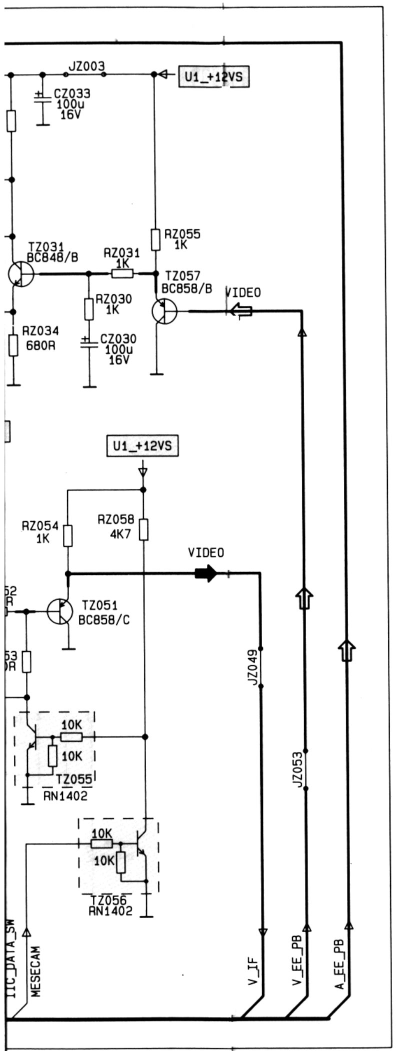
TUNER / IF		MODE		
LOC	PIN	PB	REC	EE
TZ031	E	2.6	2.5	2.6
	B	3.3	3.1	3.1
	C	9.6	9.8	9.8
TZ032	E	3.3	3.2	3.2
	B	2.7	2.5	2.5
	C	0	0	0
TZ050	E	4.6	5.1	5.1
	B	5.3	5.7	5.7
	C	12.2	12.2	12.2
TZ051	E	2.3	2.5	2.3
	B	1.7	1.8	1.8
	C	0	0	0
TZ055	E	0	0	0
	B	8.1	8.1	8.1
	C	0	0	0
TZ056	E	0	0	0
	B	0	0	0
	C	8.2	8.2	8.2
TZ057	E	3.1	3.1	3.1
	B	2.4	2.4	2.4

TZ031, TZ055, TZ056 are not used for UK sets.

Tuner/modulator (PAL I) / IF section (PAL I) • Tuner/modulatore (PAL I) / FI (PAL I) • Tuner/


0010M
TUNER
FE 4231
MODULATOR
+5VE
AGC
12VS
MOD_V_IN
MOD_A_IN
12VS
U7_+5VE
32V
SCL_EV
SDA_EV
IF
0200M
IF
4102
TRAP31.9
AGC
VIDEO_OUT
AUDIO
12VS
V3 MAIN
TU/IF-U
AUDIO
LZ002 2U2
CZ003 47u 16V
LZ003 0R
JZ042
JZ040
CZ014 47u 16V
JZ007
JZ006
CZ005 100p
AUDIO
CS119 4u7 16V
JS122
JS123
JS124
JS125
IIC_DATA_EV
IIC_CLOCK_EV
TO SERVO / CONTROL PART AND SIGNAL

dulator (BG) / ZF (BG)

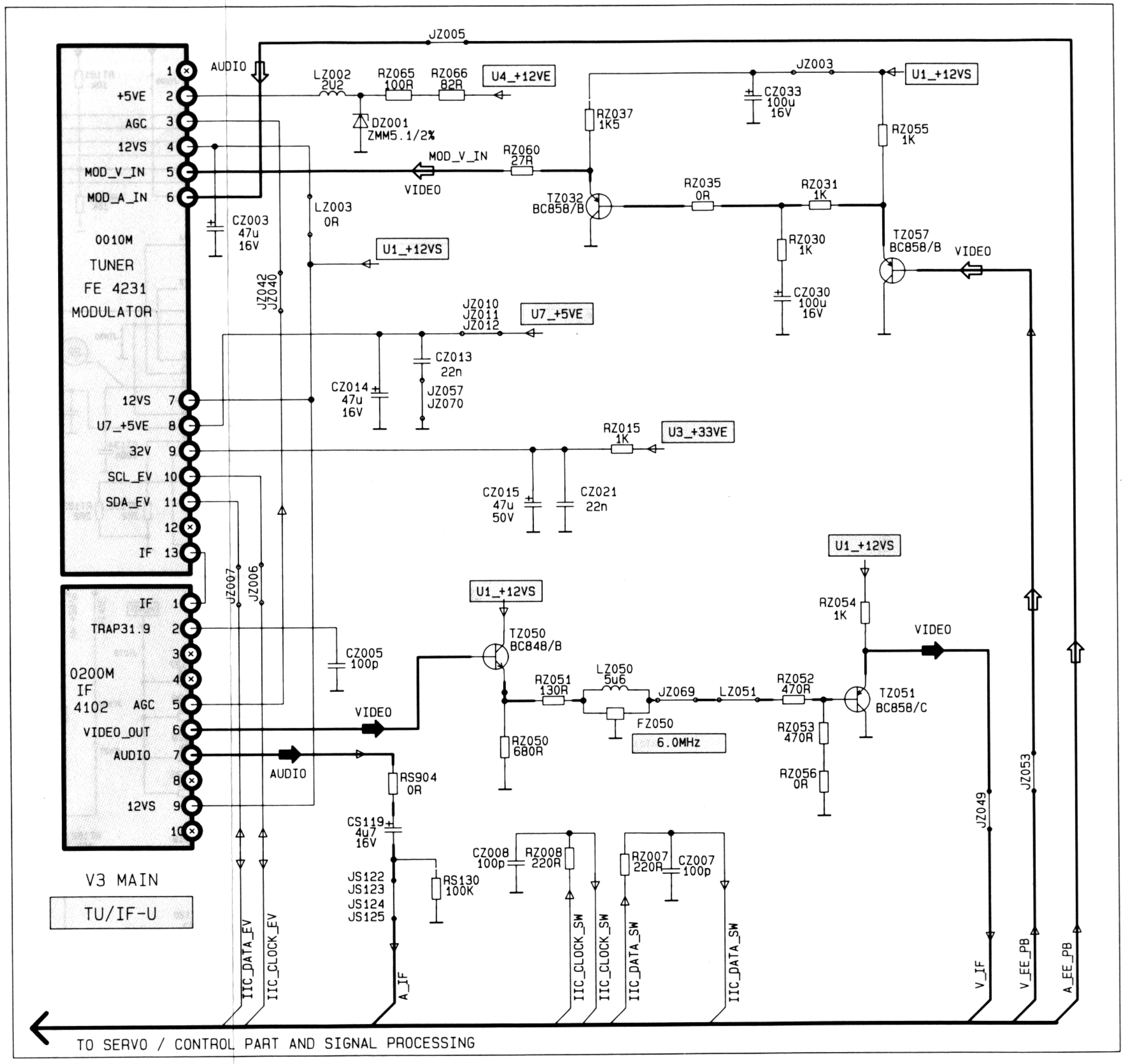

JZ003
U1_+12VS
CZ033
100u
16V
TZ031
BC848/B
RZ031
1K
RZ055
1K
TZ057
BC858/B
VIDEO
RZ030
1K
RZ034
680R
CZ030
100u
16V
U1_+12VS
RZ054
1K
RZ058
4K7
VIDEO
TZ051
BC858/C
10K
10K
TZ055
RN1402
10K
10K
TZ056
RN1402
JZ049
JZ053
IIC_DATA_SW
MESECAM
V_IF
V_EE_PB
A_EE_PB

TUNER / IF		MODE		
LOC	PIN	PB	REC	EE
FE4201	1	N.C.	N.C.	N.C.
	2	4.9	5.0	4.9
	3	5.5	5.3	5.5
	4	12.0	12.1	12.0
	5	3.3	3.2	3.2
	6	0	0	0
	7	12.2	12.2	12.2
	8	5.3	5.4	5.3
	9	31.1	31.1	31.1
	10	4.8	4.8	4.8
	11	4.9	4.7	4.9
	12	1.2	0	0
	13	1.9	1.9	1.9
IF4101	1	1.9	1.9	1.9
	2	3.7	3.7	3.7
	3	1.2	1.2	1.2
	4	9.5	9.5	9.5
	5	5.2	5.2	5.2
	6	5.3	5.7	5.7
	7	6.7	6.8	6.8
	8	0	0	0
	9	12.2	12.2	12.2
	10	0	0	0

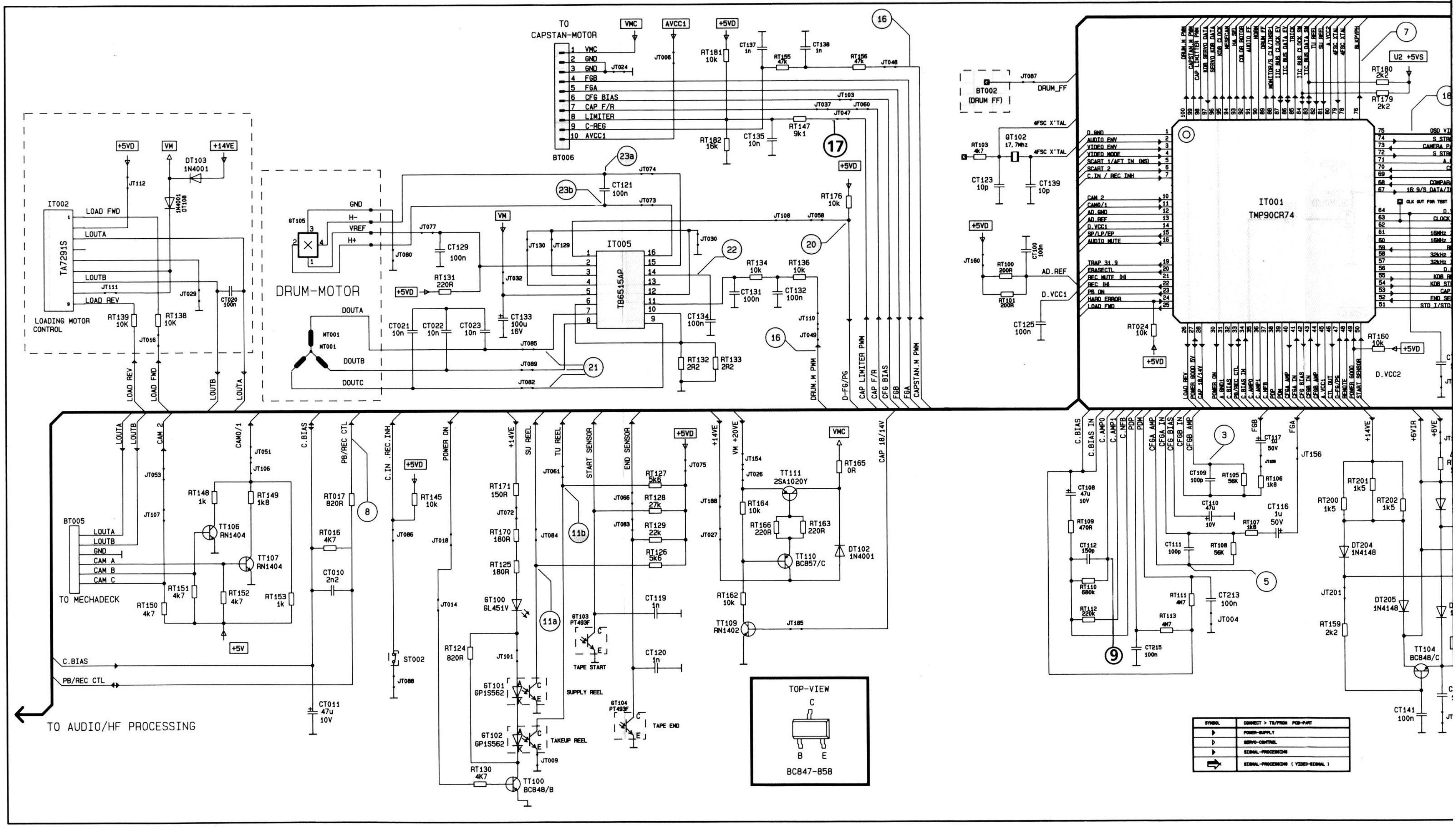
TUNER / IF		MODE		
LOC	PIN	PB	REC	EE
FE4231	1	N.C.	N.C.	N.C.
	2	4.9	5.0	4.9
	3	5.5	5.3	5.5
	4	12.0	12.1	12.0
	5	3.3	3.2	3.2
	6	0	0	0
	7	12.2	12.2	12.2
	8	5.3	5.4	5.3
	9	31.1	31.1	31.1
	10	4.8	4.8	4.8
	11	4.9	4.7	4.9
	12	1.2	0	0
	13	1.9	1.9	1.9
IF4102	1	1.9	1.9	1.9
	2	3.7	3.7	3.7
	3	1.2	1.2	1.2
	4	9.5	9.5	9.5
	5	5.2	5.2	5.2
	6	5.3	5.7	5.7
	7	6.7	6.8	6.8
	8	0	0	0
	9	12.2	12.2	12.2
	10	0	0	0

TUNER / IF		MODE		
LOC	PIN	PB	REC	EE
TZ031	E	2.6	2.5	2.6
	B	3.3	3.1	3.1
	C	9.6	9.8	9.8
TZ032	E	3.3	3.2	3.2
	B	2.7	2.5	2.5
	C	0	0	0
TZ050	E	4.6	5.1	5.1
	B	5.3	5.7	5.7
	C	12.2	12.2	12.2
TZ051	E	2.3	2.5	2.3
	B	1.7	1.8	1.8
	C	0	0	0
TZ055	E	0	0	0
	B	8.1	8.1	8.1
	C	0	0	0
TZ056	E	0	0	0
	B	0	0	0
	C	8.2	8.2	8.2
TZ057	E	3.1	3.1	3.1
	B	2.4	2.4	2.4
TZ031, TZ055, TZ056 are not used for UK sets.				

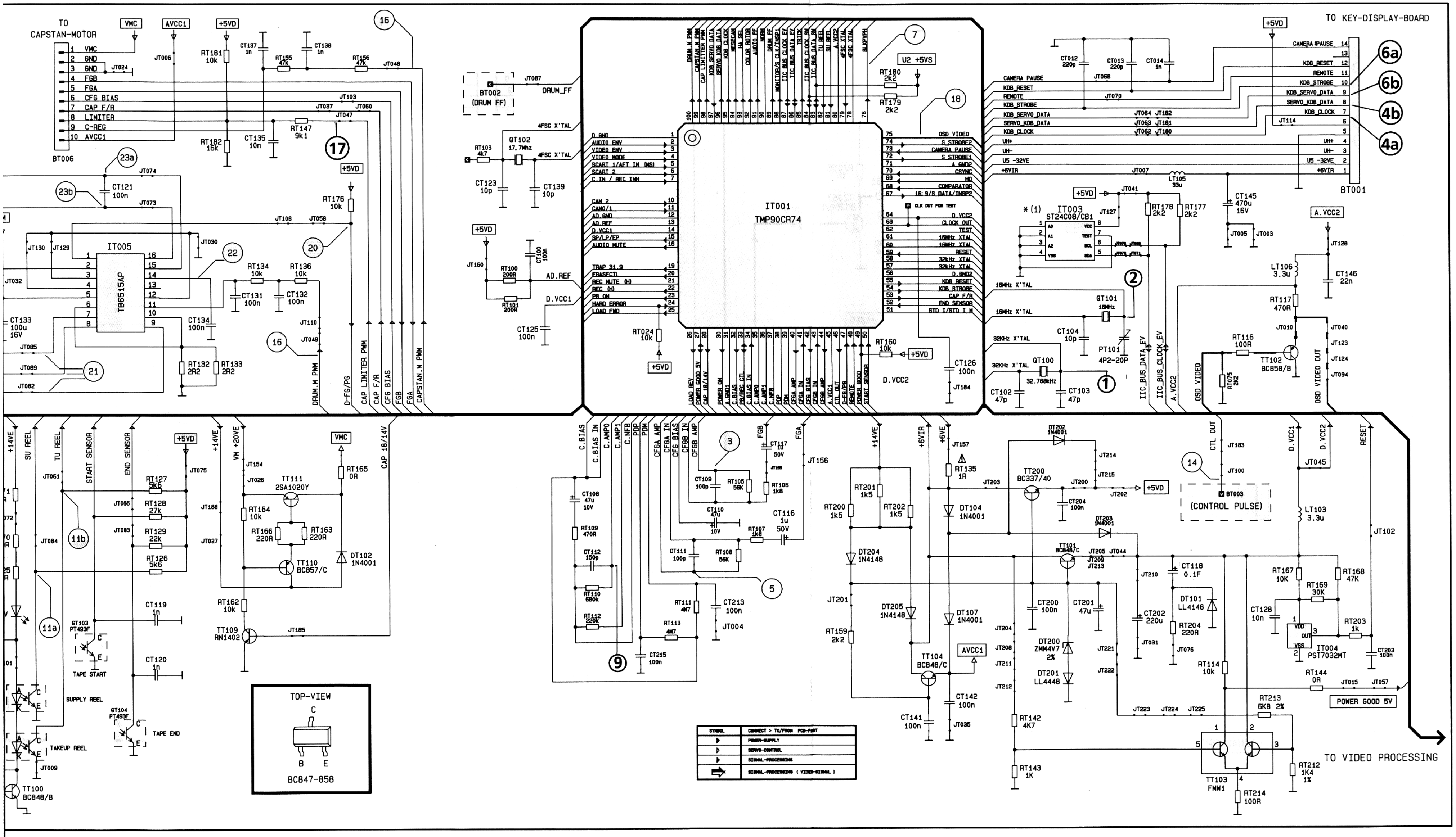
Tuner/modulator (PAL I) / IF section (PAL I) • Tuner/modulateur (PAL I) / FI (PAL I) • Tuner/Modulator (PAL I) / ZF (PAL I) Tuner/modulatore (PAL I) / FI (PAL I) • Tuner/modulador (PAL I) / FI (PAL I)


JZ005
AUDIO
+5VE 2
AGC 3
12VS 4
MOD_V_IN 5
MOD_A_IN 6
0010M
TUNER
FE 4231
MODULATOR
12VS 7
U7_+5VE 8
32V 9
SCL_EV 10
SDA_EV 11
12
IF 13
LZ002
2U2
RZ065
100R
RZ066
82R
U4_+12VE
DZ001
ZMM5.1/2%
MOD_V_IN
RZ060
27R
VIDEO
RZ037
1K5
TZ032
BC858/B
JZ003
CZ033
100u
16V
U1_+12VS
RZ055
1K
RZ035
0R
RZ031
1K
RZ030
1K
CZ030
100u
16V
TZ057
BC858/B
VIDEO
CZ003
47u
16V
LZ003
0R
U1_+12VS
JZ042
JZ040
JZ010
JZ011
JZ012
U7_+5VE
CZ013
22n
CZ014
47u
16V
JZ057
JZ070
RZ015
1K
U3_+33VE
CZ015
47u
50V
CZ021
22n
IF 1
TRAP31.9 2
3
0200M
IF
4102
AGC 5
VIDEO_OUT 6
AUDIO 7
8
12VS 9
10
JZ007
JZ006
CZ005
100p
VIDEO
AUDIO
U1_+12VS
TZ050
BC848/B
RZ051
130R
LZ050
5u6
JZ069
LZ051
RZ052
470R
TZ051
BC858/C
FZ050
6.0MHz
RZ050
680R
RZ053
470R
RZ056
0R
U1_+12VS
RZ054
1K
VIDEO
RS904
0R
CS119
4u7
16V
JS122
JS123
JS124
JS125
RS130
100K
CZ008
100p
RZ008
220R
RZ007
220R
CZ007
100p
V3 MAIN
TU/IF-U
IIC_DATA_EV
IIC_CLOCK_EV
A_IF
IIC_CLOCK_SW
IIC_CLOCK_SW
IIC_DATA_SW
IIC_DATA_SW
JZ049
JZ053
V_IF
V_EE_PB
A_EE_PB
TO SERVO / CONTROL PART AND SIGNAL PROCESSING

Mecha deck control / servo control • Gestion / Asservissements • Mechaniksteuerung / Servo
Controllo meccanismo / asservimenti • Servomecanismo / gestión

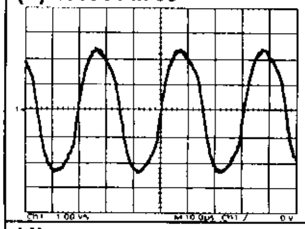

TO CAPSTAN-MOTOR
VMC
AVCC1
+5VD
BT006
1 VMC
2 GND
3 GND
4 FGB
5 FGA
6 CFG BIAS
7 CAP F/R
8 LIMITER
9 C-REG
10 AVCC1
RT181 10k
RT182 16k
CT135 10n
RT147 9k1
CT137 1n
CT138 1n
RT155 47k
RT156 47k
16
17
23a
23b
CT121 100n
IT002
TA7291S
LOAD FWD
LOUTA
LOUTB
LOAD REV
DT103 1N4001
RT139 10K
RT138 10K
CT020 100n
LOADING MOTOR CONTROL
+14VE
VM
DRUM-MOTOR
GND
H-
VREF
H+
DOUTA
DOUTB
DOUTC
CT129 100n
RT131 220R
CT021 10n
CT022 10n
CT023 10n
CT133 100u 16V
IT005
TB6515AP
22
20
21
RT134 10k
RT136 10k
CT131 100n
CT132 100n
CT134 100n
RT132 2R2
RT133 2R2
RT176 10k
DRUM.M PWM
D-FG/PG
CAP LIMITER PWM
CAP F/R
CFG BIAS
FGB
FGA
CAPSTAN.M PWM
BT002 (DRUM FF)
DRUM_FF
QT102 17.7MHz
RT103 4k7
CT123 10p
CT139 10p
RT100 200R
RT101 200R
AD.REF
D.VCC1
CT125 100n
RT024 10k
IT001
TMP90CR74
RT180 2k2
RT179 2k2
U2 +5VS
7
18
RT160 10k
D.VCC2
LOUTA
LOUTB
CAM 2
CAM0/1
C.BIAS
PB/REC CTL
C.IN .REC.INH
POWER ON
+14VE
SU REEL
TU REEL
START SENSOR
END SENSOR
VM +20VE
CAP 18/14V
BT005
GND
CAM A
CAM B
CAM C
TO MECHADECK
RT148 1k
RT149 1k8
TT106 RN1404
TT107 RN1404
RT150 4k7
RT151 4k7
RT152 4k7
RT153 1k
+5V
RT017 820R
RT016 4K7
CT010 2n2
CT011 47u 10V
8
RT145 10k
ST002
RT171 150R
RT170 180R
RT125 180R
GT100 GL451V
RT124 820R
GT101 GP1S562
GT102 GP1S562
RT130 4K7
TT100 BC848/B
11a
11b
GT103 PT493F
TAPE START
SUPPLY REEL
GT104 PT493F
TAPE END
TAKEUP REEL
RT127 5k6
RT128 27k
RT129 22k
RT126 5k6
CT119 1n
CT120 1n
TT111 2SA1020Y
RT164 10k
RT166 220R
RT163 220R
TT110 BC857/C
DT102 1N4001
RT165 0R
RT162 10k
TT109 RN1402
TOP-VIEW
C
B E
BC847-858
C.BIAS
PB/REC CTL
TO AUDIO/HF PROCESSING
C.BIAS IN
C.AMP0
C.AMP1
C.NFB
PDP
PDM
CFGA AMP
CFGB IN
CFG BIAS
CFGB AMP
FGB
FGA
3
5
9
CT108 47u 10V
RT109 470R
CT112 150p
RT110 680k
RT112 220k
CT109 100p
RT105 56K
RT106 1k8
CT117 1u 50V
CT110 47u 10V
CT116 1u 50V
RT107 1k8
CT111 100p
RT108 56K
RT111 4M7
RT113 4M7
CT213 100n
CT215 100n
JT004
JT156
+14VE
+6VIR
+6VE
RT201 1k5
RT200 1k5
RT202 1k5
DT204 1N4148
DT205 1N4148
RT159 2k2
TT104 BC848/C
CT141 100n
CONNECT > TO/FROM PCB-PART
POWER-SUPPLY
SERVO-CONTROL
SIGNAL-PROCESSING
SIGNAL-PROCESSING (VIDEO-SIGNAL)

ng / Servo


TO CAPSTAN-MOTOR
BT006
1 VMC
2 GND
3 GND
4 FGB
5 FGA
6 CFG BIAS
7 CAP F/R
8 LIMITER
9 C-REG
10 AVCC1
VMC
AVCC1
+5VD
RT181 10k
RT182 16k
CT135 10n
CT137 1n
CT138 1n
RT155 47k
RT156 47k
RT147 9k1
IT005
TB6515AP
RT134 10k
RT136 10k
CT131 100n
CT132 100n
CT133 100u 16V
CT134 100n
RT132 2R2
RT133 2R2
CT121 100n
RT176 10k
DRUM.M PWM
D-FG/PG
CAP LIMITER PWM
CAP F/R
CFG BIAS
FGB
FGA
CAPSTAN.M PWM
BT002 (DRUM FF)
DRUM_FF
QT102 17.7MHz
RT103 4k7
4FSC X'TAL
CT123 10p
CT139 10p
RT100 200R
RT101 200R
CT100 10n
AD.REF
D.VCC1
CT125 100n
RT024 10k
IT001
TMP90CR74
U2 +5VS
RT180 2k2
RT179 2k2
RT160 10k
CT126 100n
D.VCC2
TO KEY-DISPLAY-BOARD
BT001
CAMERA PAUSE
KDB_RESET
REMOTE
KDB_STROBE
KDB_SERVO_DATA
SERVO_KDB_DATA
KDB_CLOCK
UH+
UH-
U5 -32VE
+6VIR
CT012 220p
CT013 220p
CT014 1n
LT105 33u
CT145 470u 16V
IT003 ST24C08/CB1
RT178 2k2
RT177 2k2
QT101 16MHz
16MHz X'TAL
32kHz X'TAL
QT100 32.768kHz
CT104 10p
PT101 4P2-20P
CT102 47p
CT103 47p
IIC_BUS_DATA_EV
IIC_BUS_CLOCK_EV
A.VCC2
OSD VIDEO
OSD VIDEO OUT
A.VCC2
LT106 3.3u
CT146 22n
RT117 470R
RT116 100R
TT102 BC858/B
RT075 2K2
+14VE
SU REEL
TU REEL
START SENSOR
END SENSOR
VM +20VE
CAP 18/14V
RT127 5K6
RT128 27k
RT129 22k
RT126 5K6
TT111 2SA1020Y
RT164 10k
RT166 220R
RT163 220R
TT110 BC857/C
DT102 1N4001
RT165 0R
RT162 10k
TT109 RN1402
CT119 1n
CT120 1n
ST103 PT493F
TAPE START
SUPPLY REEL
ST104 PT493F
TAPE END
TAKEUP REEL
TT100 BC848/B
TOP-VIEW
C
B E
BC847-858
C.BIAS
C.BIAS IN
C.AMP0
C.AMP1
C.NFB
PDP
PDM
CFGA AMP
CFGA IN
CFG BIAS
CFGB IN
CFGB AMP
CT108 47u 10V
RT109 470R
CT112 150p
RT110 680k
RT112 220k
CT109 100p
RT105 56K
RT106 1k8
CT117 1u 50V
CT110 47u 10V
RT107 1k8
CT116 1u 50V
CT111 100p
RT108 56K
RT111 4M7
RT113 4M7
CT213 100n
CT215 100n
FGB
FGA
+14VE
+6VIR
+6VE
RT135 1R
DT104 1N4001
RT201 1k5
RT200 1k5
RT202 1k5
DT204 1N4148
DT205 1N4148
DT107 1N4001
RT159 2k2
TT104 BC848/C
AVCC1
CT142 100n
CT141 100n
RT142 4K7
RT143 1K
DT202 1N4001
TT200 BC337/40
CT204 100n
DT203 1N4001
TT101 BC848/C
CT200 100n
CT201 47u
DT200 ZMM4V7 2%
DT201 LL4448
CT202 220u
CT118 0.1F
DT101 LL4148
RT204 220R
RT114 10k
TT103 FMW1
RT214 100R
RT213 6K8 2%
RT212 1K4 1%
+5VD
CTL OUT
BT003 (CONTROL PULSE)
D.VCC1
D.VCC2
RESET
LT103 3.3u
RT167 10K
RT168 47K
RT169 30K
CT128 10n
IT004 PST7032MT
RT203 1k
CT203 100n
RT144 0R
POWER GOOD 5V
TO VIDEO PROCESSING
SYMBOL | CONNECT > TO/FROM PCB-PART
POWER-SUPPLY
SERVO-CONTROL
SIGNAL-PROCESSING
SIGNAL-PROCESSING (VIDEO-SIGNAL)

Measurements mecha deck control / servo control • Mesures Gestion / asservissements • Messungen Mechaniksteu
Misuri controllo meccanismo / asservimenti • Medidas Servomecanismo / gestión

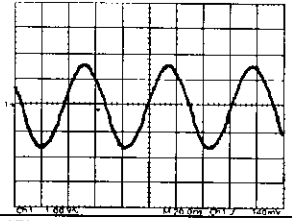
(1) IT001 Pin 58



XT-OUT
(33kHz)

V:1V/div
H:10μs/div

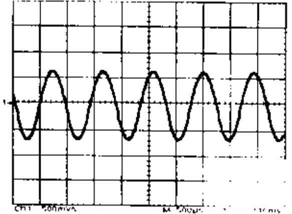
(2) IT001 Pin 60



X-OUT
(16MHz)

V:1V/div
H:0.02μs/div

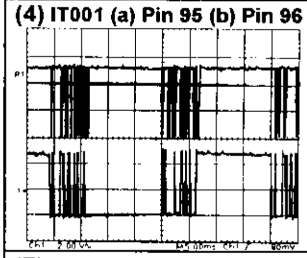
(3) IT001 Pin 44



CFGB AMP

V:500mV/div
H:500μs/div

(4) IT001 (a) Pin 95 (b) Pin 96

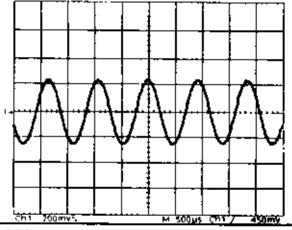


(a) CLK

(b) S DATA

V:2V/div
H:5ms/div

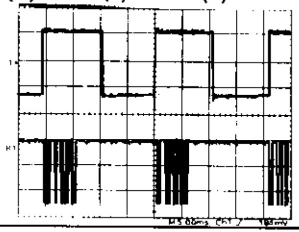
(5) IT001 Pin 40



CFGA.AMP

V:200mV/div
H:500μs/div

(6) IT001 (a) Pin 54 (b) Pin 97

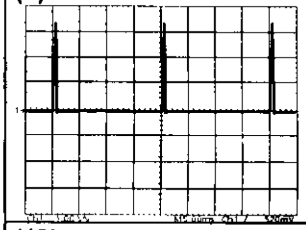


(a) STB

(b) SDA IN

V:2V/div
H:5ms/div

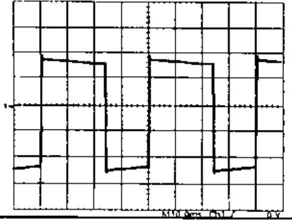
(7) IT001 Pin 76



PV/PH/BLK
STILL

V:1V/div
H:5ms/div

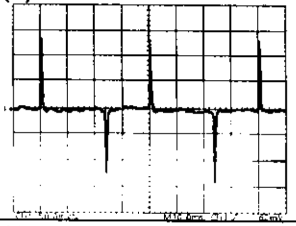
(8) IT001 Pin 33



PB/REC CTL

V:1V/div
H:10ms/div

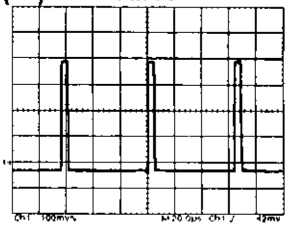
(9) IT001 Pin 35



C AMPO

V:500mV/div
H:10ms/div

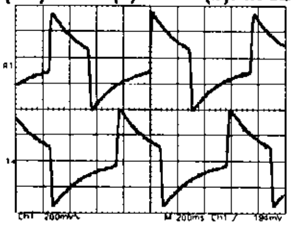
(10) IT001 Pin 70



CSYNC

V:1V/div
H:20μs/div

(11) IT001 (a)Pin 81 (b)Pin 82

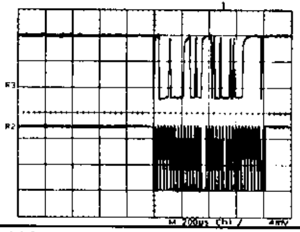


(a) SU FG

(b) TU FG

V:2V/div
H:200ms/div

(12) IT001 (a) Pin 83 (b) Pin 84

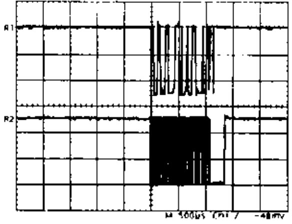


(a) SDA1

(b) SCL1

V:2V/div
H:200μV/div

(13) IT001 (a) Pin 86 (b) Pin 87

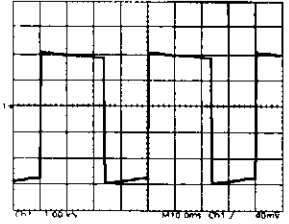


(a) SDA2

(b) SCL2

V:2V/div
H:500μs/div

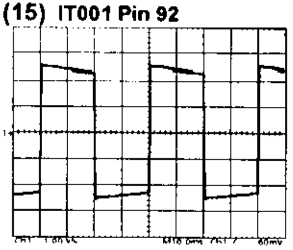
(14) IT001 Pin 46



CTL OUT

V:1V/div
H:10ms/div

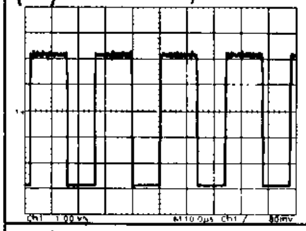
(15) IT001 Pin 92



CR
Color Rotary

V:1V/div
H:10ms/div

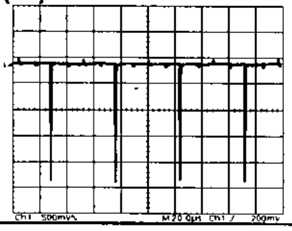
(16) IT001 Pin 99, 100



CPWM

V:1V/div
H:10μs/div

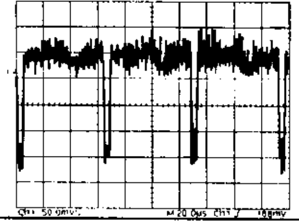
(17) IT001 Pin 98



CAP
Limitter PWM

V:500mV/div
H:20μs/div

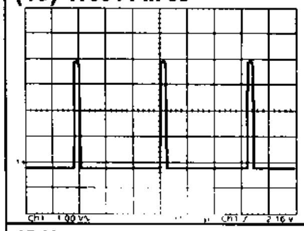
(18) IT001 Pin 75



OSD
VIDEO

V:50mV/div
H:20μs/div

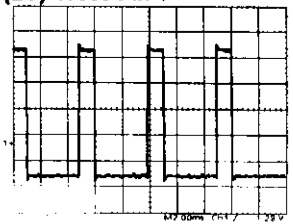
(19) IT001 Pin 69



HD IN

V:1V/div
H:20μs/div

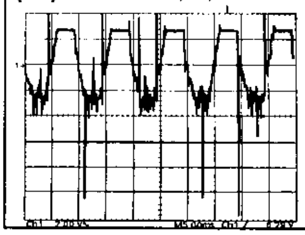
(20) IT005 Pin 1



FoOUT

V:1V/div
H:2ms/div

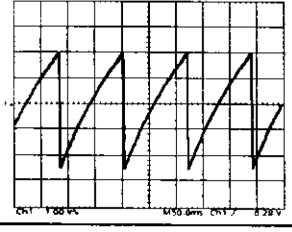
(21) IT005 Pin 7, 8, 9



La, Lb, Lc

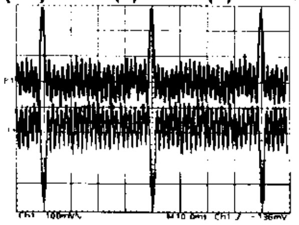
V:2V/div
H:5ms/div

(22) IT005 Pin 14



V:1V/div
H:50ms/div

(23) IT005 (a)Pin 15 (b) Pin 16



(a) H-

(b) H+

V:100mV/div
H:10ms/div

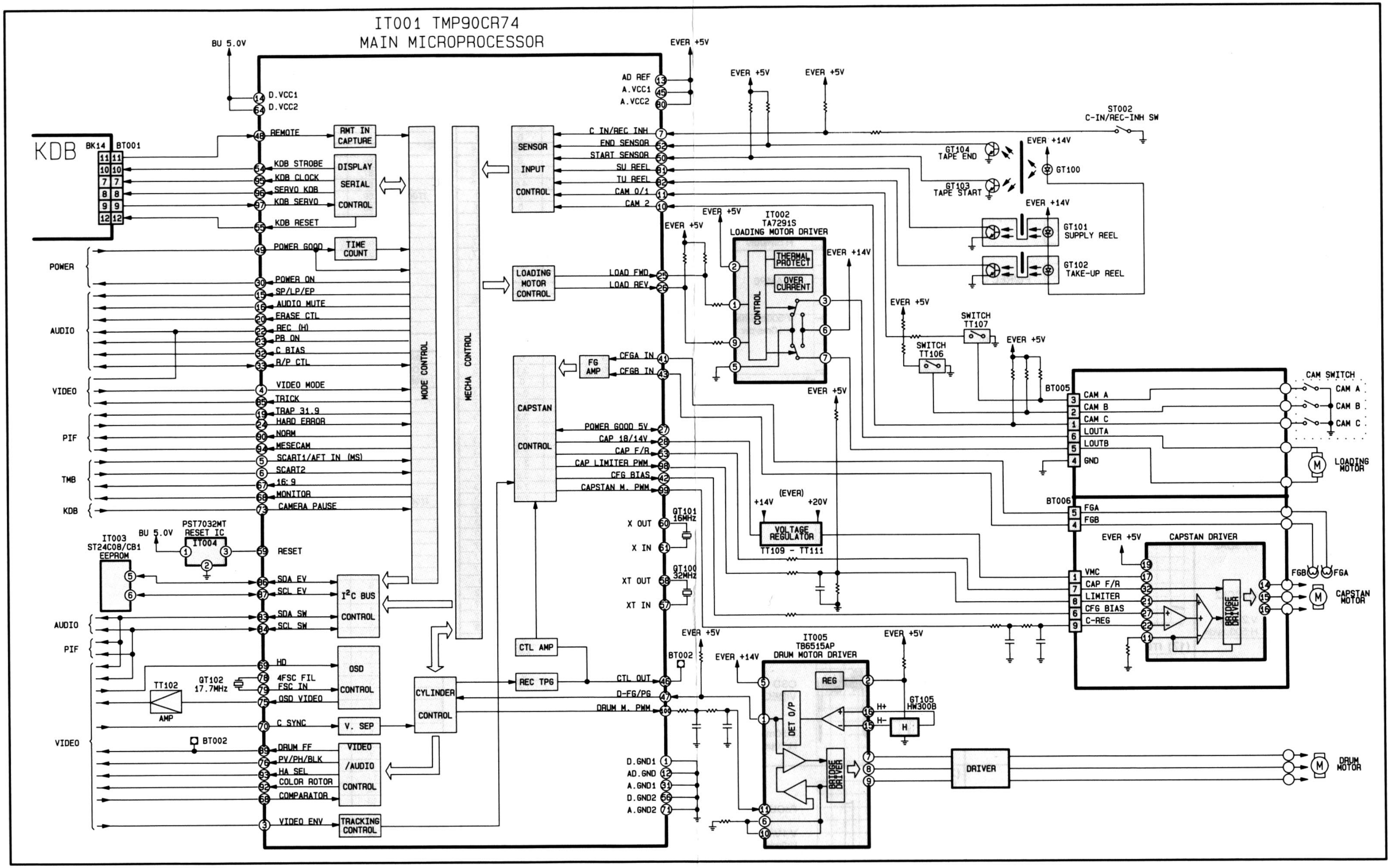
MAIN SERVO			MODE	
LOC	PIN	STOP	PLAY	REC
IT001	1	0	0	0
	2	0	0	0
	3	1.1	3.2	2.4
	4	0.9	0.7	0.9
	5	4.8	4.8	4.8
	6	0	0	0
	7	4.8	4.8	4.8
	8	0	0	0
	9	0	0	0
	10	0	0	0
	11	1.9	1.5	1.9
	12	0	0	0
	13	4.8	3.9	4.8
	14	4.7	4.8	4.7
	15	0	0	0
	16	0	0	0
	17	0	0	0
	18	0	0	0
	19	4.7	4.6	4.7
	20	0	0	4.7
	21	4.7	4.7	0
	22	0	0	4.7
	23	0	0	0
	24	4.9	4.8	4.8
	25	0	0	0
	26	0	0	0
	27	4.7	0	0
	28	0	0	0
	29	0	0	0
	30	4.6	3.1	4.5
	31	0	0	0
	32	2.3	0.4	2.3
	33	2.3	2.3	2.7
	34	2.3	2.3	2.3
	35	2.3	2.3	2.3
	36	2.3	2.3	2.3
	37	2.3	2.3	2.3
	38	2.3	3.7	2.3
	39	1.6	0.9	1.6
	40	2.6	2.4	2.3
	41	2.3	2.3	2.3
	42	2.3	2.4	2.3
	43	2.3	2.4	2.3
	44	2.3	2.4	2.3
IT001	45	4.7	4.7	4.7
	46	0	2.9	4.7
	47	0.9	0.9	0.7
	48	0	0	0
	49	5.2	5.2	5.2
	50	4.7	4.7	4.7
	51	4.7	4.7	4.7
	52	4.8	4.8	4.8
	53	0	0	0
	54	2.3	2.5	4.7
	55	4.6	4.6	4.6
	56	0	0	0
	57	1.7	1.7	1.7
	58	2.2	2.4	2.4
	59	4.7	4.7	4.7
	60	2.3	2.3	2.2
	61	1.9	1.9	1.9
	62	4.7	4.8	4.7
	63	0	0	0
	64	4.7	4.7	4.7
	65	0	0	0
	66	0	0	0
	67	0	0	0
	68	4.9	0	0
	69	0.4	0.4	0.3
IT001	70	0.5	0.5	0.4
	71	0	0	0
	72	4.7	4.7	4.7
	73	0	0	0
	74	0	0	0

MAIN SERVO			MODE	
LOC	PIN	STOP	PLAY	REC
IT001	75	1.3	1.3	1.3
	76	1.6	1.7	1.6
	77	0	0	0
	78	2.2	2.2	2.2
	79	2.1	2.1	2.0
	80	5.0	5.0	5.0
	81	0	2.4	0.8
	82	0	2.4	1.4
	83	5.0	5.0	5.0
	84	5.0	5.0	4.9
	85	0	4.7	0
	86	4.8	4.9	4.4
	87	4.9	4.9	4.4
	88	4.7	4.7	4.7
IT001	89	2.4	2.4	4.6
	90	0	0	0
	91	0	0	0
	92	2.4	0	4.6
	93	4.7	0	0
	94	0	0	0
	95	4.3	4.3	3.4
	96	0.3	1.9	1.2
	97	3.1	2.9	1.6
	98	0.4	2.9	2.9
	99	0	2.5	2.5
	100	2.6	2.7	2.7

MAIN SERVO			MODE	
LOC	PIN	STOP	PLAY	REC
IT002	1	0	0	0
	2	4.9	4.9	4.8
	3	0	0	0
	4	0	0	0
	5	0	0	0
	6	13.4	13.4	13.4
	7	0	0	0
	8	13.4	13.4	13.4
	9	0	0	0
IT003	1	0	0	0
	2	0	0	0
	3	0	0	0
	4	0	0	0
	5	4.8	4.9	4.8
	6	4.8	4.9	4.8
	7	0	0	0
	8	5.0	5.0	5.0
IT004	1	4.6	4.8	4.7
	2	0	0	0
	3	4.6	4.8	4.7
IT005	1	0.9	1.0	0.9
	2	1.4	1.4	1.4
	3	0	0	0
	4	0	0	0
	5	13.7	13.7	13.6
	6	0	0	0
	7	10.3	10.2	10.2
	8	10.3	10.2	10.2
	9	10.3	10.2	10.2
IT005	10	0	0	0
	11	2.6	2.6	2.6
	12	0	0	0
	13	5.0	5.0	5.1
	14	3.2	3.3	3.3
	15	0.6	0.6	0.7
	16	0.7	0.7	0.8

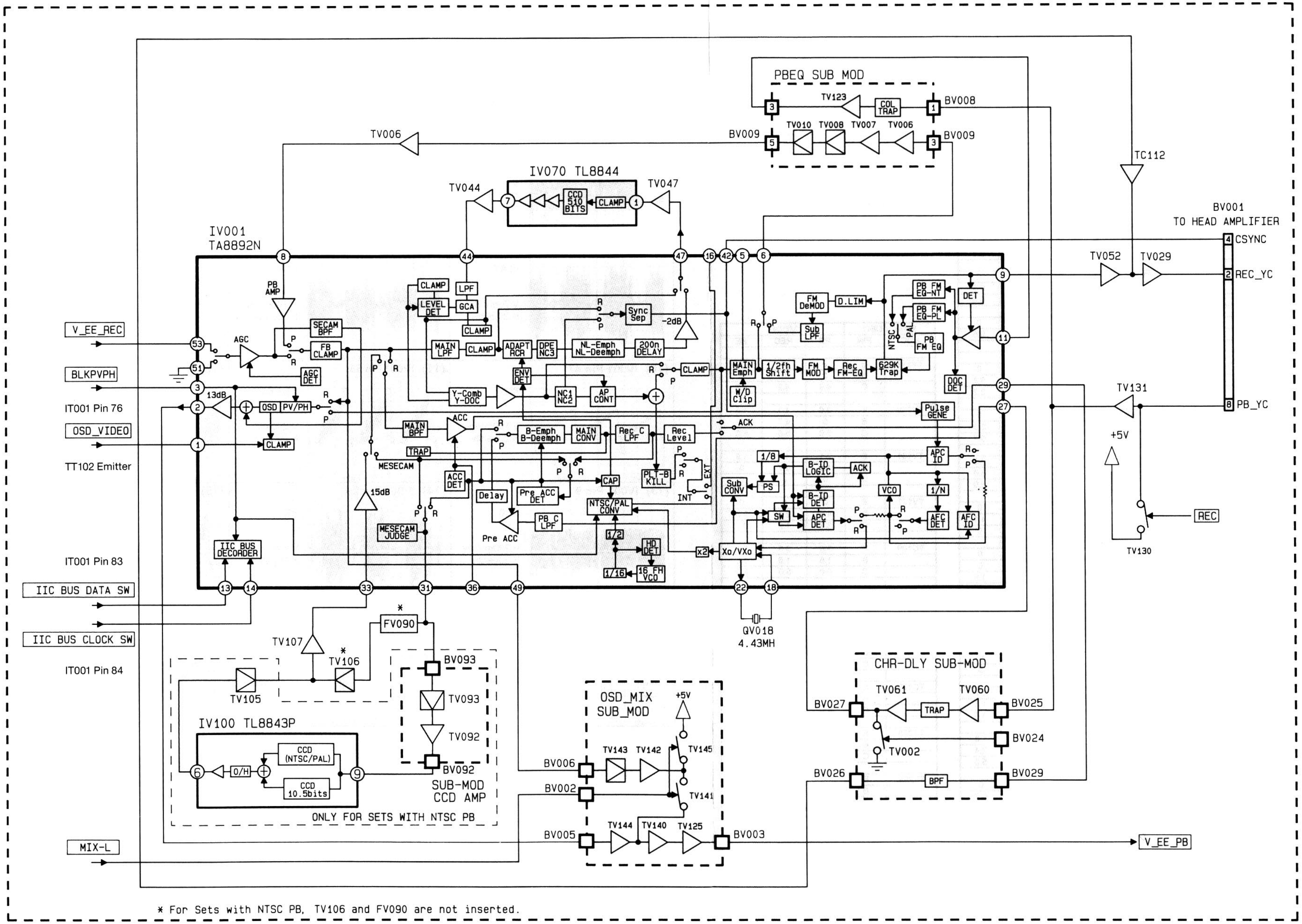
MAIN SERVO			MODE	
LOC	PIN	STOP	PLAY	REC
TT100	E	0	0	0
	B	0.5	0.7	0.7
	C	0	0	0
TT101	E	4.8	4.8	4.8
	B	5.5	5.5	5.5
	C	5.9	5.9	5.9
TT102	E	2.0	2.0	1.9
	B	1.3	1.3	1.3
	C	0	0	0
TT104	E	4.7	4.7	4.7
	B	5.4	5.4	5.4
	C	5.9	5.9	5.9
TT106	E	0	0	0
	B	4.3	4.3	4.4
	C	0	0	0
TT107	E	0	0	0
	B	4.4	0	4.5
	C	0	0	0
TT109	E	0	0	0
	B	0	0	0
	C	24.3	25.1	25.2
TT110	E	23.7	25.1	24.6
	B	24.3	24.4	25.2
	C	14.3	14.3	14.2
TT200	E	5.0	5.0	5.0
	B	5.5	5.5	5.5
	C	5.9	5.9	6.0

Block diagram mecha deck control / servo control • Schéma synoptique Gestion / Asservissements • Blockschaltbild Mechaniksteuerung / Servo
Schema a blocchi controllo meccanismo / asservimenti • Esquema de bloques Servomecanismo / gestión



IT001 TMP90CR74
MAIN MICROPROCESSOR
BU 5.0V
D.VCC1
D.VCC2
KDB
BK14
BT001
REMOTE
RMT IN CAPTURE
KDB STROBE
KDB CLOCK
SERVO KDB
KDB SERVO
DISPLAY SERIAL CONTROL
KDB RESET
POWER GOOD
TIME COUNT
POWER
POWER ON
SP/LP/EP
AUDIO MUTE
ERASE CTL
REC (H)
PB ON
C BIAS
R/P CTL
AUDIO
VIDEO MODE
TRICK
VIDEO
TRAP 31.9
HARD ERROR
NORM
MESECAM
PIF
SCART1/AFT IN (MS)
SCART2
16:9
MONITOR
TMB
CAMERA PAUSE
KDB
MODE CONTROL
MECHA CONTROL
IT003 ST24C08/CB1 EEPROM
PST7032MT RESET IC
IT004
RESET
SDA EV
SCL EV
SDA SW
SCL SW
I²C BUS CONTROL
HD
4FSC FIL
FSC IN
OSD VIDEO
OSD CONTROL
TT102
QT102 17.7MHz
AMP
C SYNC
V. SEP
BT002
DRUM FF
PV/PH/BLK
HA SEL
COLOR ROTOR
COMPARATOR
VIDEO /AUDIO CONTROL
VIDEO ENV
TRACKING CONTROL
CYLINDER CONTROL
CTL AMP
REC TPG
CAPSTAN CONTROL
FG AMP
CFGA IN
CFGB IN
POWER GOOD 5V
CAP 18/14V
CAP F/R
CAP LIMITER PWM
CFG BIAS
CAPSTAN M. PWM
LOADING MOTOR CONTROL
LOAD FWD
LOAD REV
SENSOR INPUT CONTROL
C IN/REC INH
END SENSOR
START SENSOR
SU REEL
TU REEL
CAM 0/1
CAM 2
AD REF
A.VCC1
A.VCC2
EVER +5V
X OUT
X IN
QT101 16MHz
XT OUT
XT IN
QT100 32MHz
CTL OUT
D-FG/PG
DRUM M. PWM
D.GND1
AD.GND
A.GND1
D.GND2
A.GND2
ST002 C-IN/REC-INH SW
GT104 TAPE END
GT103 TAPE START
EVER +14V
GT100
GT101 SUPPLY REEL
GT102 TAKE-UP REEL
IT002 TA7291S LOADING MOTOR DRIVER
THERMAL PROTECT
OVER CURRENT
CONTROL
SWITCH TT107
SWITCH TT106
BT005
CAM A
CAM B
CAM C
LOUTA
LOUTB
GND
CAM SWITCH
LOADING MOTOR
(EVER)
+14V
+20V
VOLTAGE REGULATOR
TT109 - TT111
BT006
FGA
FGB
CAPSTAN DRIVER
VMC
CAP F/R
LIMITER
CFG BIAS
C-REG
BRIDGE DRIVER
CAPSTAN MOTOR
IT005 TB6515AP DRUM MOTOR DRIVER
REG
DET O/P
H+
H-
GT105 HW300B
H
DRIVER
DRUM MOTOR

Block diagram video signal processing • Schéma synoptique traitement video • Blockschaltbild Video Signalverarbeitung Schema a blocchi elaborazione video • Esquema de bloques tratamiento vídeo


PBEQ SUB MOD
TV123
COL TRAP
BV008
BV009
TV010 TV008 TV007 TV006
BV009
TV006
TC112
IV070 TL8844
TV044
CCD 510 BITS
CLAMP
TV047
BV001
TO HEAD AMPLIFIER
CSYNC
REC_YC
PB_YC
IV001
TA8892N
TV052
TV029
PB AMP
SECAM BPF
FB CLAMP
AGC
AGC DET
V_EE_REC
BLKPVPH
IT001 Pin 76
OSD_VIDEO
TT102 Emitter
13dB
OSD
PV/PH
CLAMP
LEVEL DET
GCA
LPF
MAIN LPF
ADAPT RCR
DPE NC3
NL-Emph NL-Deemph
200n DELAY
Sync Sep
-2dB
ENV DET
Y-Comb Y-DOC
NC1 NC2
AP CONT
MAIN BPF
ACC
TRAP
MESECAM
B-Emph B-Deemph
MAIN CONV
Rec C LPF
Rec Level
ACK
ACC DET
Delay
Pre ACC DET
CAP
PLT-B KILL
EXT
INT
15dB
MESECAM JUDGE
PB C LPF
Pre ACC
NTSC/PAL CONV
1/2
HD DET
1/16
16 FH VCO
x2
Xo/VXo
IIC BUS DECORDER
IT001 Pin 83
IIC BUS DATA SW
IIC BUS CLOCK SW
IT001 Pin 84
FM DeMOD
D.LIM
Sub LPF
PB FM EQ-NT
PB FM EQ-PL
PB FM EQ
NTSC
PAL
DET
MAIN Emph
W/D Clip
1/2fh Shift
FM MOD
Rec FM-EQ
629K Trap
DOC DET
Pulse GENE
APC ID
1/8
B-ID LOGIC
Sub CONV
PS
B-ID DET
SW
APC DET
VCO
1/N
AFC DET
AFC ID
TV131
+5V
REC
TV130
QV018
4.43MH
FV090
TV107
TV106
TV105
BV093
TV093
TV092
BV092
SUB-MOD
CCD AMP
IV100 TL8843P
CCD (NTSC/PAL)
0/H
CCD 10.5bits
ONLY FOR SETS WITH NTSC PB
OSD_MIX SUB_MOD
TV143 TV142
TV145
TV141
TV144 TV140 TV125
BV006
BV002
BV005
BV003
V_EE_PB
MIX-L
CHR-DLY SUB-MOD
TV061
TV060
TRAP
BV027
BV025
BV024
TV002
BV026
BPF
BV029
R
P

* For Sets with NTSC PB, TV106 and FV090 are not inserted.

Measurements video signal processing • Mesures traitement video • Messungen Video Signalverarbeitung
Misuri elaborazione video • Medidas tratamiento vídeo

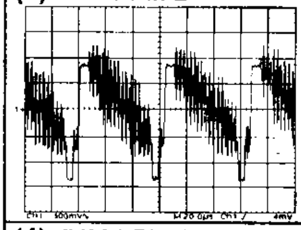
MAIN VIDEO		MODE		
LOC	PIN	PB	REC	EE
IV001	1	2.8	2.8	2.8
	2	2.3	2.1	2.2
	3	1.6	1.6	1.6
	4	0	4.1	4.1
	5	2.6	2.5	2.5
	6	2.7	2.6	2.6
	7	0	0	0
	8	2.9	2.8	2.9
	9	0.6	2.1	2.1
	10	0	0	0
	11	3.1	3.1	3.1
	12	5.0	4.9	0
	13	4.9	5.0	4.9
	14	4.9	5.0	4.8
	15	0	0	0
	16	2.1	1.2	1.2
	17	3.7	3.8	3.8
	18	1.8	2.2	2.2
IV001	19	2.8	2.8	2.8
	20	1.9	2.2	2.2
	21	2.8	2.8	2.7
	22	2.3	2.8	2.8
	23	4.9	4.8	4.9
	24	2.9	0	2.8
	25	2.8	2.8	2.8
	26	0	0.9	0
	27	3.0	2.7	2.7
	28	5.0	4.9	4.9
	29	0.3	1.5	1.5
	30	2.9	1.9	1.8
	31	1.7	1.5	1.5
	32	1.6	1.8	1.8
	33	2.9	2.9	2.9
	34	3.9	3.9	3.9
	35	2.7	2.6	2.6
	36	3.2	2.9	3.0
	37	2.1	2.2	2.1
	38	2.5	2.6	0
	39	1.7	0.4	0
	40	0	0.9	1.3
	41	0.4	0.4	0.4
	42	0.5	0.5	0.4
	43	2.5	2.5	2.5
	44	4.1	4.1	4.1
	45	2.7	2.7	2.7
	46	3.4	3.4	3.5
	47	1.6	1.5	1.5
	48	2.7	2.7	2.7
	49	1.7	1.5	1.5
	50	3.5	3.5	3.5
	51	2.2	2.2	2.2
	52	2.5	2.4	2.4
	53	2.2	2.2	2.2
	54	4.9	5.0	4.9

MAIN VIDEO		MODE		
LOC	PIN	PB	REC	EE
IV070	1	2.1	2.1	2.0
	2	10.2	10.2	10.2
	3	0.4	0.4	0.4
	4	2.2	2.2	2.2
	5	5.0	5.0	4.9
	6	0	0	0
	7	4.1	4.1	4.0
	8	1.2	1.2	1.2

MAIN VIDEO		MODE		
LOC	PIN	PB	REC	EE
TV022	E	1.7	2.2	2.1
	B	2.3	2.8	2.8
	C	5.0	5.0	5.0
TV029	E	0.6	2.1	2.1
	B	1.3	2.8	2.8
	C	5.0	5.0	5.0
TV035	E	0	0	0
	B	4.7	0	0
	C	0	0.8	0.8
TV036	E	0	0	0
	B	1.2	0.6	0.6
	C	0	0	0
TV037	E	0	0	0
	B	0	0.8	0.7
	C	1.2	0.6	0.6
TV038	E	0	0	0
	B	0	0.8	0.8
	C	1.3	0.7	0.6
TV039	E	0	0	0
	B	1.3	0.7	0.6
	C	0	0	0
TV040	E	0	0	0
	B	0.7	0.3	0.3
	C	4.6	2.4	2.2
TV041	E	0	0	0
	B	4.6	2.3	2.3
	C	1.3	0.7	0.7
TV044	E	3.4	3.4	3.3
	B	4.1	4.0	4.0
	C	5.0	5.0	5.0
TV045	E	0	0	0
	B	0	4.0	4.1
	C	2.7	0	0
TV046	E	0	0	0
	B	2.7	0	0
	C	0	1.5	1.5
TV047	E	2.1	2.2	2.2
	B	1.4	1.5	1.5
	C	0	0	0
TV052	E	1.3	2.8	2.7
	B	0.6	2.1	2.1
	C	0	0	0
TV106	E	1.2	1.2	1.2
	B	1.9	1.8	1.8
	C	3.6	3.6	3.6
TV107	E	1.8	1.8	1.8
	B	0	2.4	2.4
	C	5.0	5.0	5.0
TV111	E	0	0	0
	B	0.6	0.7	0.7
	C	0	0	0

MAIN VIDEO		MODE		
LOC	PIN	PB	REC	EE
TV112	E	0	0	0
	B	0	0	0
	C	4.9	4.9	4.9
TV130	E	2.0	4.1	1.8
	B	0	4.7	0
	C	5.0	5.0	5.0
TV131	E	2.1	4.1	1.9
	B	1.5	4.7	0
	C	0	0	0
TV137	E	0	0	0
	B	4.6	2.4	2.3
	C	3.2	1.2	0.1
TC109	E	3.6	3.6	3.6
	B	1.6	1.6	1.6
	C	5.0	5.0	5.0
TC110	E	3.6	3.6	3.6
	B	4.2	4.2	4.2
	C	4.9	4.9	4.9
TC112	E	2.1	2.1	2.1
	B	1.5	1.5	1.5
	C	0	0	0
TC130	E	0.8	0.8	0.8
	B	1.4	1.4	1.4
	C	4.9	4.9	4.9
TV200	E	0	0	0
	B	2.0	2.0	2.0
	C	0	0	0
TV201	E	1.5	1.5	1.5
	B	0	0	0
	C	4.9	4.9	4.9

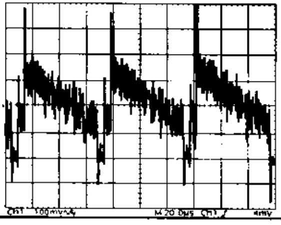
(1) IV001 Pin 2



PLAY

V:500mV/div
H:20µs/div

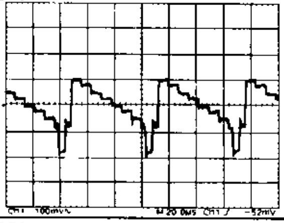
(2) IV001 Pin 6



PLAY

V:100mV/div
H:20µs/div

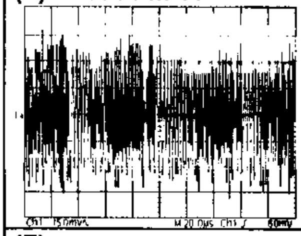
(3) IV001 Pin 8



PLAY

V:100mV/div
H:20µs/div

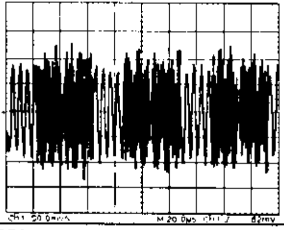
(4) IV001 Pin 11



PLAY

V75mV/div
H:20µs/div

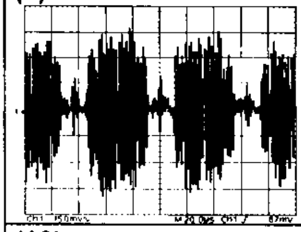
(6) IV001 Pin 27



PLAY

V:50mV/div
H:20µs/div

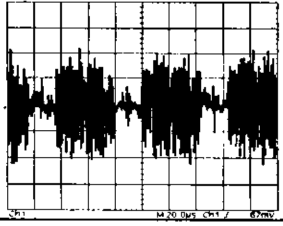
(7) IV001 Pin 31



PLAY

V:75mV/div
H:20µs/div

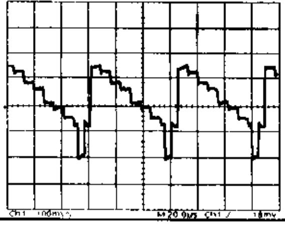
(8) IV001 Pin 33



PLAY

V:100mV/div
H:20µs/div

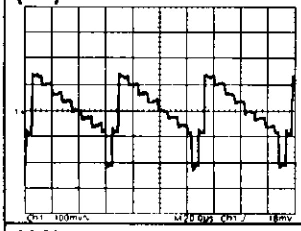
(9) IV001 Pin 46



PLAY

V:100mV/div
H:20µs/div

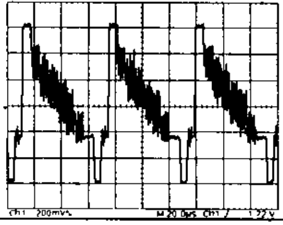
(10) IV001 Pin 47



PLAY

V:100mV/div
H:20µs/div

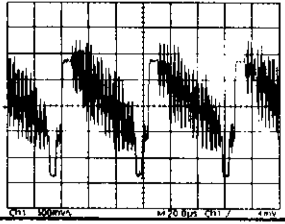
(11) IV001 Pin 53



EE/REC

V:200mV/div
H:20µs/div

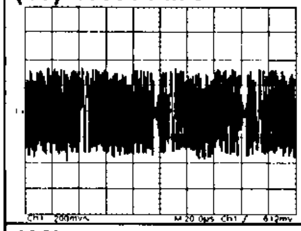
(12) IV001 Pin 2



REC (SP)

V:500mV/div
H:20µs/div

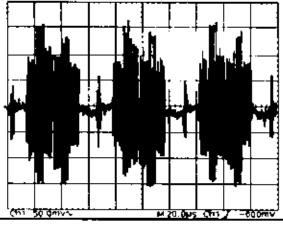
(13) IV001 Pin 9



REC

V:200mV/div
H:20µs/div

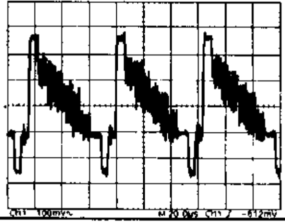
(14) IV001 Pin 29



REC

V:50mV/div
H:20µs/div

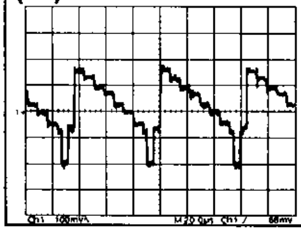
(15) IV001 Pin 49



REC

V:100mV/div
H:20µs/div

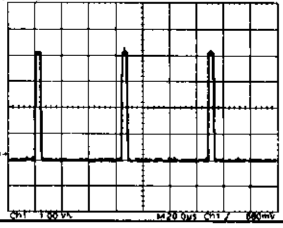
(16) IV070 Pin 1



PLAY

V:100mV/div
H:20µs/div

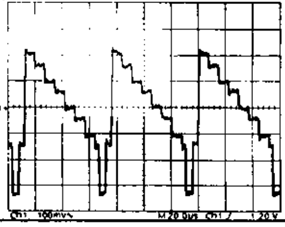
(17) IV070 Pin 3



PLAY

V:1V/div
H:20µs/div

(18) IV070 Pin 7

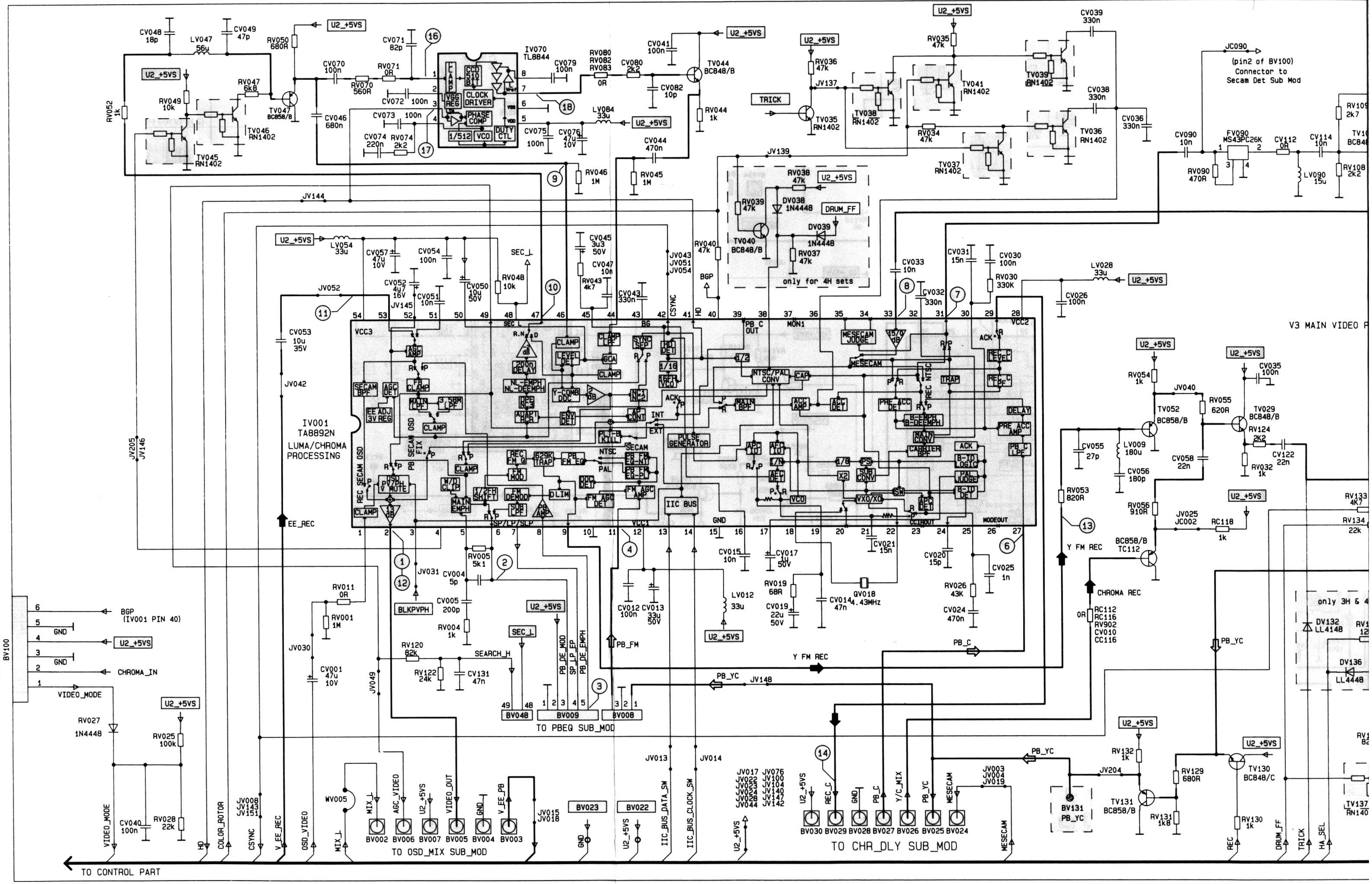


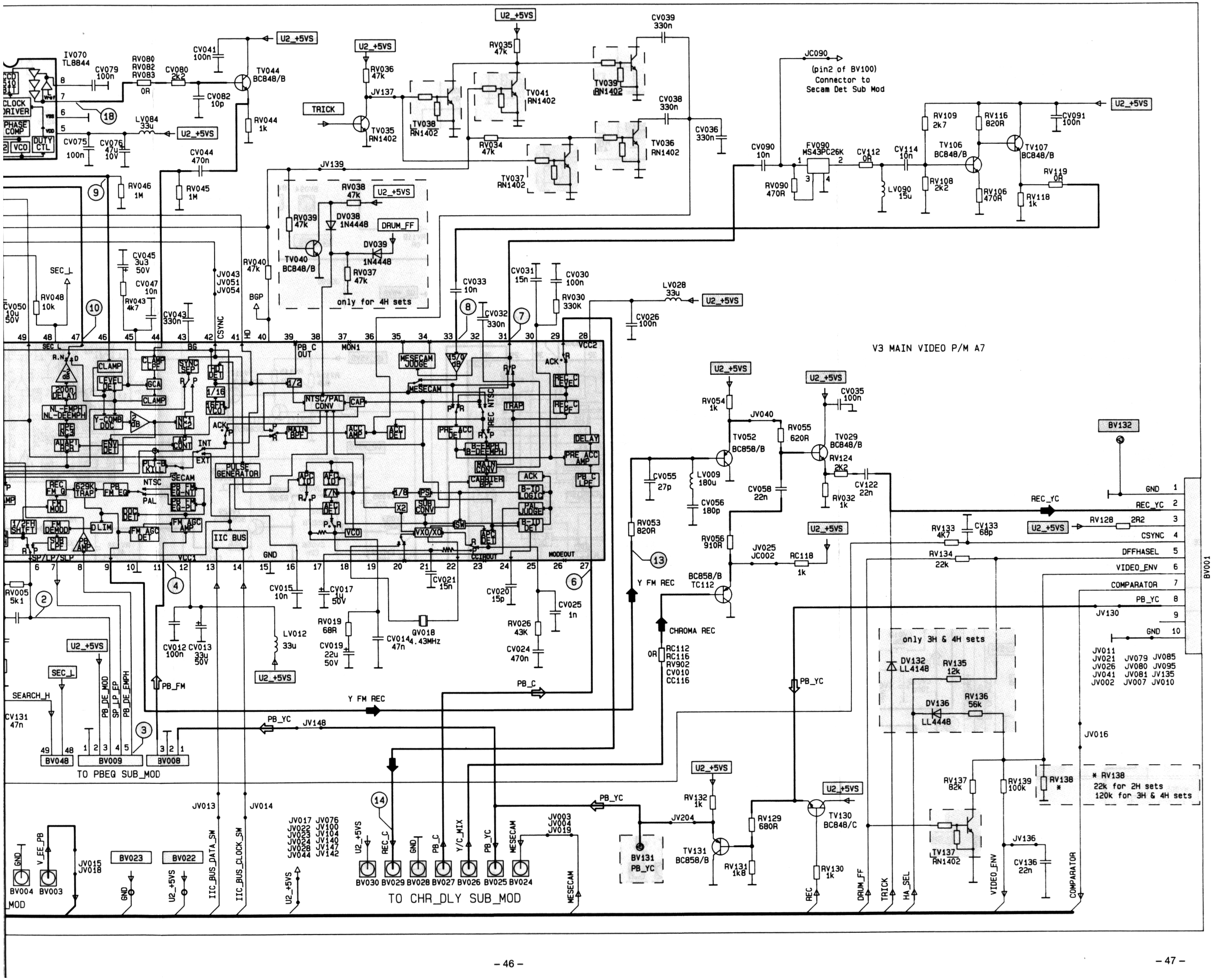
PLAY

V:100mV/div
H:20µs/div

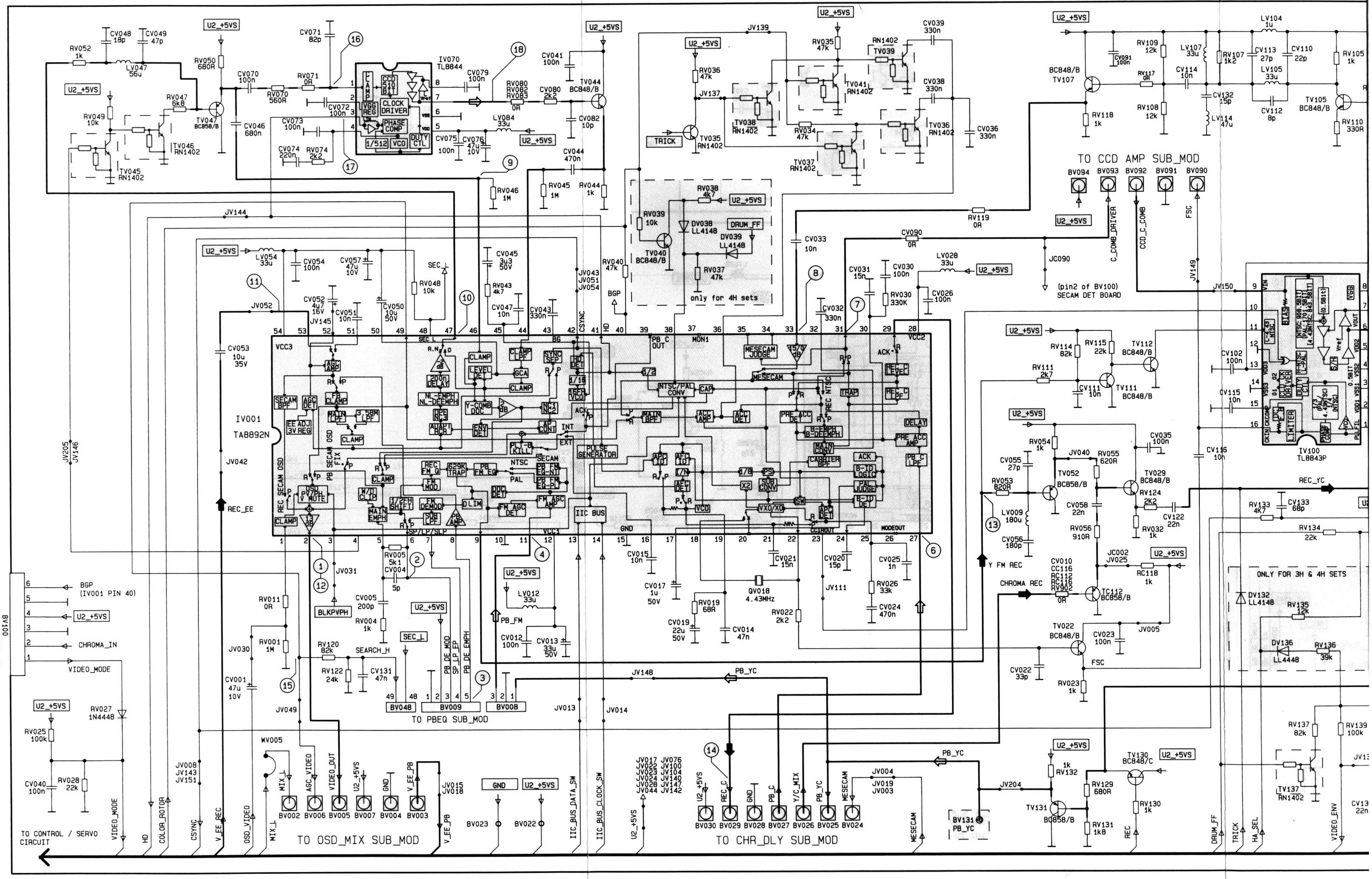
E
EE
0
0
4.9
1.8
0
5.0
1.9
0
0
0
2.3
0.1
3.6
1.6
5.0
3.6
4.2
4.9
2.1
1.5
0
0.8
1.4
4.9
0
2.0
0
1.5
0
4.9

Video signal processing • Traitement Luminance / Chrominance • Video Signalverarbeitung
Elaborazione video • Tratamiento vídeo

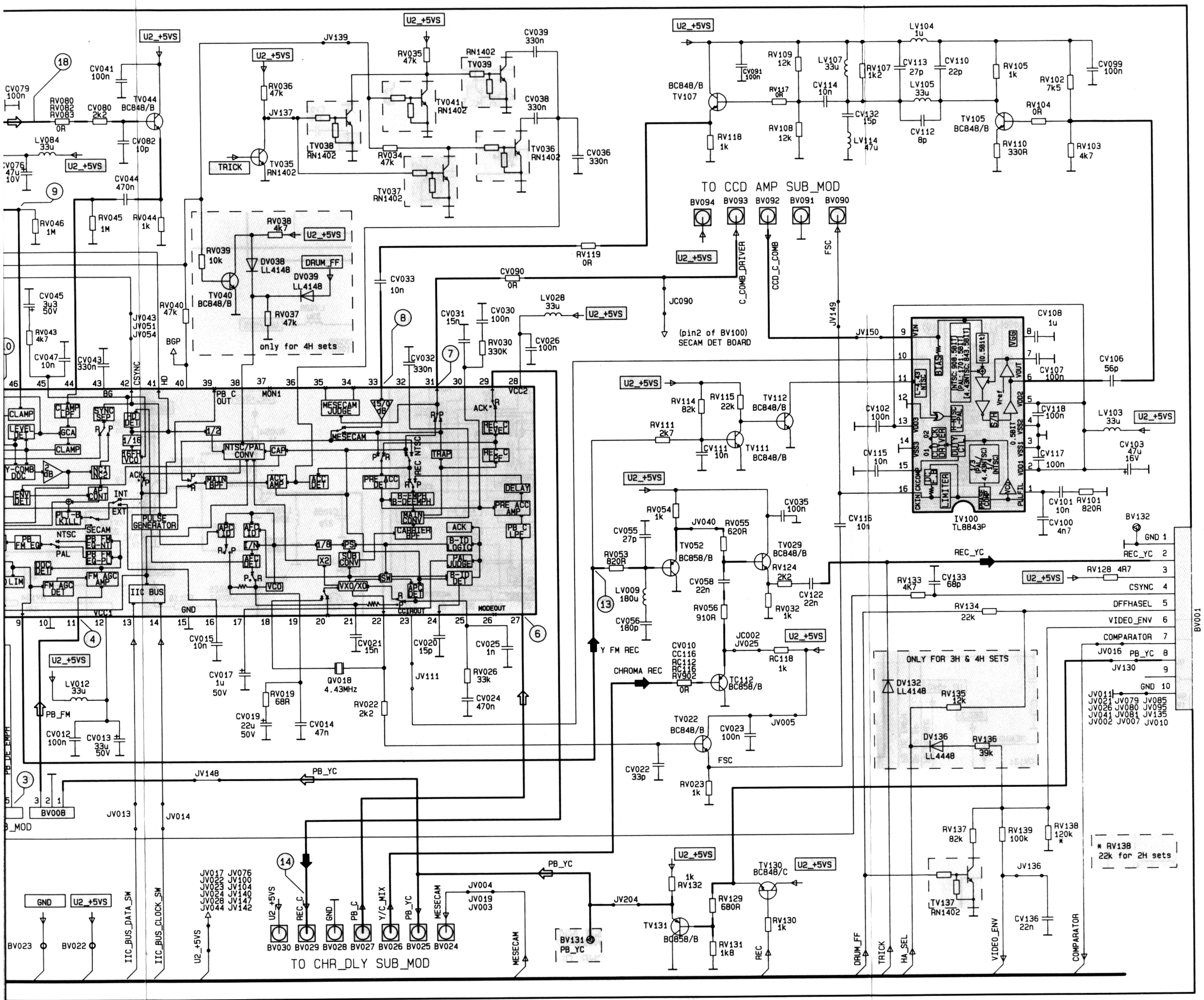

IV001
TA8892N
LUMA/CHROMA
PROCESSING
IV070
TL8844
U2_+5VS
TRICK
DRUM_FF
only for 4H sets
JC090
(pin2 of BV100)
Connector to
Secam Det Sub Mod
FV090
MS43PC26K
V3 MAIN VIDEO P
TO SECAM DET SUB-MOD
BV100
BGP
(IV001 PIN 40)
GND
CHROMA_IN
VIDEO_MODE
EE_REC
BLKPVPH
SEARCH_H
SEC_L
PB_FM
Y FM REC
PB_YC
PB_C
CHROMA REC
only 3H & 4
TO PBEQ SUB_MOD
BV048
BV009
BV008
PB_DE_MOD
SP_LP_EP
PB_DE_EMPH
TO OSD_MIX SUB_MOD
BV002
BV006
BV007
BV005
BV004
BV003
MIX_L
AGC_VIDEO
U2_+5VS
VIDEO_OUT
GND
V_FE_PB
BV023
BV022
IIC_BUS_DATA_SW
IIC_BUS_CLOCK_SW
TO CHR_DLY SUB_MOD
BV030
BV029
BV028
BV027
BV026
BV025
BV024
REC_C
PB_C
Y/C_MIX
PB_YC
MESECAM
BV131
PB_YC
TO CONTROL PART
VIDEO_MODE
HD
COLOR_ROTOR
CSYNC
V_FE_REC
OSD_VIDEO
MIX_L
REC
DRUM_FF
TRICK
HA_SEL

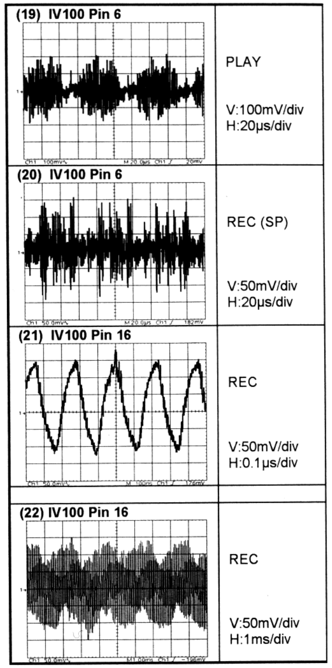

V3 MAIN VIDEO P/M A7
U2_+5VS
IV070
TL8844
CLOCK DRIVER
PHASE COMP
VCO
DUTY CTL
TRICK
TV044 BC848/B
TV035 RN1402
TV036 RN1402
TV037 RN1402
TV038 RN1402
TV039 RN1402
TV040 BC848/B
TV041 RN1402
DV038 1N4448
DV039 1N4448
DRUM_FF
only for 4H sets
JC090
(pin2 of BV100) Connector to Secam Det Sub Mod
FV090 MS43PC26K
TV106 BC848/B
TV107 BC848/B
TV052 BC858/B
TV029 BC848/B
BC858/B TC112
Y FM REC
CHROMA REC
PB_FM
PB_C
PB_YC
REC_YC
BV132
GND
CSYNC
DFFHASEL
VIDEO_ENV
COMPARATOR
JV130
BV001
TO HEADAMP (INTEGRATED IN LOWER-DRUM)
only 3H & 4H sets
DV132 LL4148
DV136 LL4448
RV135 12k
RV136 56k
* RV138
22k for 2H sets
120k for 3H & 4H sets
TV130 BC848/C
TV131 BC858/B
TV137 RN1402
BV131 PB_YC
BV048
BV009
BV008
TO PBEQ SUB_MOD
SEARCH_H
SEC_L
PB_DE_MOD
SP_LP_EP
PB_DE_EMPH
IIC BUS
MESECAM JUDGE
NTSC/PAL CONV
PULSE GENERATOR
CLAMP
SYNC SEP
JV013
JV014
IIC_BUS_DATA_SW
IIC_BUS_CLOCK_SW
BV030 BV029 BV028 BV027 BV026 BV025 BV024
TO CHR_DLY SUB_MOD
REC_C
Y/C_MIX
MESECAM
BV004 BV003
V_FE_PB
BV023
BV022
QV018 4.43MHz
REC
DRUM_FF
TRICK
HA_SEL
VIDEO_ENV
COMPARATOR

Video signal processing with NTSC Playback • Traitement Luminance / Chrominance avec lecture NTSC
Video Signalverarbeitung mit NTSC Wiedergabe • Elaborazione video con riproduzione NTSC • Tratamiento vídeo con reproducción NTSC


IV001
TA8892N
IV070
TL8844
IV100
TL8843P
U2_+5VS
TO CCD AMP SUB_MOD
BV094 BV093 BV092 BV091 BV090
C_COMB_DRIVER
CCD_C_COMB
FSC
(pin2 of BV100)
SECAM DET BOARD
TO SECAM DET SUB-MOD
BV100
BGP
(IV001 PIN 40)
CHROMA_IN
VIDEO_MODE
TRICK
DRUM_FF
only for 4H sets
ONLY FOR 3H & 4H SETS
REC_EE
REC_YC
Y FM REC
CHROMA REC
PB_FM
PB_YC
BLKPVPH
SEARCH_H
SEC_L
PB_DE_MOD
SP_LP_EP
PB_DE_EMPH
TO PBEQ SUB_MOD
BV048 BV009 BV008
TO CONTROL / SERVO CIRCUIT
VIDEO_MODE
HD
COLOR_ROTOR
CSYNC
V_FE_REC
OSD_VIDEO
MIX_L
MIX_L AGC_VIDEO VIDEO_OUT U2_+5VS GND V_FE_PB
BV002 BV006 BV005 BV007 BV004 BV003
TO OSD_MIX SUB_MOD
V_FE_PB
BV023 BV022
GND
IIC_BUS_DATA_SW
IIC_BUS_CLOCK_SW
U2_+5VS
U2_+5VS REC_C GND PB_C Y/C_MIX PB_YC MESECAM
BV030 BV029 BV028 BV027 BV026 BV025 BV024
TO CHR_DLY SUB_MOD
MESECAM
BV131
PB_YC
REC
DRUM_FF
TRICK
HA_SEL
VIDEO_ENV
QV018
4.43MHz

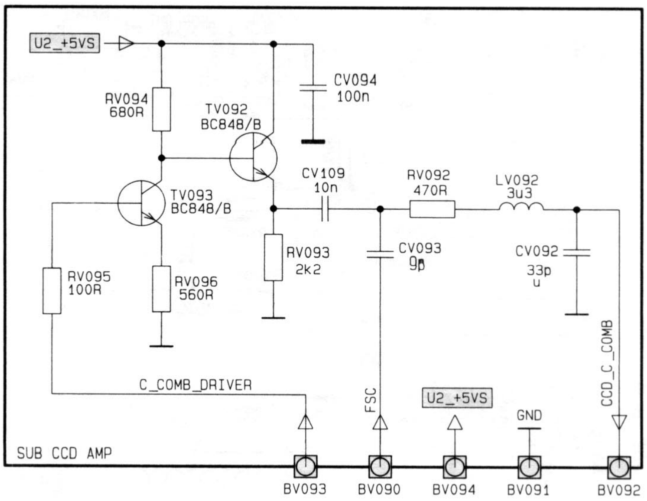
nce avec lecture NTSC
zione NTSC • Tratamiento vídeo con reproducción NTSC

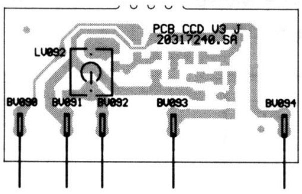

U2_+5VS
CV041 100n
CV079 100n
RV080 RV082 RV083 0R
CV080 2k2
TV044 BC848/B
LV084 33u
CV082 10p
CV044 470n
RV045 1M
RV044 1k
RV046 1M
CV045 3u3 50V
RV043 4k7
CV047 10n
CV043 330n
JV139
RV036 47k
JV137
TRICK
TV035 RN1402
TV038 RN1402
RV035 47k
RN1402
TV039
TV041 RN1402
RV034 47k
TV037 RN1402
TV036 RN1402
CV039 330n
CV038 330n
CV036 330n
RV038 4k7
RV039 10k
DV038 LL4148
DRUM_FF
DV039 LL4148
TV040 BC848/B
RV037 47k
only for 4H sets
RV040 47k
BGP
JV043 JV051 JV054
CSYNC
CV033 10n
CV090 0R
RV119 0R
LV028 33u
CV031 15n
CV030 100n
RV030 330K
CV026 100n
CV032 330n
JC090
(pin2 of BV100) SECAM DET BOARD
TO CCD AMP SUB_MOD
BV094 BV093 BV092 BV091 BV090
C_COMB_DRIVER
CCD_C_COMB
FSC
BC848/B TV107
RV109 12k
LV107 33u
RV107 1k2
CV113 27p
CV110 22p
LV104 1u
RV105 1k
CV099 100n
RV102 7k5
CV091 100n
RV117 0R
CV114 10n
LV105 33u
RV104 0R
RV108 12k
RV118 1k
CV132 15p
LV114 47u
CV112 8p
TV105 BC848/B
RV110 330R
RV103 4k7
JV149
JV150
CV108 1u
CV107 100n
CV106 56p
CV118 100n
LV103 33u
CV117 100n
CV103 47u 16V
CV101 10n
RV101 820R
CV100 4n7
CV102 100n
CV115 10n
CV116 10n
IV100 TL8843P
RV114 82k
RV115 22k
TV112 BC848/B
RV111 2k7
CV111 10n
TV111 BC848/B
RV054 1k
JV040
RV055 620R
CV035 100n
CV055 27p
TV052 BC858/B
TV029 BC848/B
RV053 820R
RV124 2k2
LV009 180u
CV058 22n
CV122 22n
RV056 910R
RV032 1k
CV056 180p
JC002 JV025
RC118 1k
CV010 CC116 RC112 RC116 RV902 0R
CHROMA REC
Y FM REC
TC112 BC858/B
TV022 BC848/B
CV023 100n
JV005
CV022 33p
FSC
RV023 1k
BV132
GND 1
REC_YC 2
RV128 4R7 3
CSYNC 4
DFFHASEL 5
VIDEO_ENV 6
COMPARATOR 7
JV016 PB_YC 8
JV130 9
GND 10
RV133 4k7
CV133 68p
RV134 22k
REC_YC
BV001 (INTEGRATED IN LOWER-DRUM)
TO HEADAMP
ONLY FOR 3H & 4H SETS
DV132 LL4148
RV135 12k
DV136 LL4448
RV136 39k
JV011 JV079 JV085 JV021 JV080 JV095 JV026 JV081 JV135 JV041 JV007 JV010 JV002
RV137 82k
RV139 100k
RV138 120k
* RV138 22k for 2H sets
JV136
TV137 RN1402
CV136 22n
CLAMP
LEVEL DET
Y-COMB DOC
ENV DET
PB FM EQ
DOC DET
LIM
CLAMP LPF
SYNC SEP
GCA
HD DET
1/16
REF VCO
NC1 NC2
CONT
INT EXT
PLT-B KILL
NTSC SECAM PAL
PB FM EQ
FM AGC AMP
FM AGC DET
IIC BUS
PULSE GENERATOR
MESECAM JUDGE
MESECAM
NTSC/PAL CONV
CAR
MAIN BPF
ACC AMP
ACC DET
PRE ACC
B-EMPH B-DEEMPH
MAIN CONV
CARRIER BPF
ACK
B-ID LOGIC
PAL JUDGE
B-ID DET
APC DET
VXO/XO
VCO
SUB CONV
PS
X2
4/8
AFC
DELAY
PRE ACC AMP
PB C LPF
REC C LEVEL
REC C LPF
TRAP
REC NTSC
MON1
PB_C OUT
VCC2
VCC1
GND
CCIROUT
MODEOUT
CV015 10n
CV017 1u 50V
RV019 68R
QV018 4.43MHz
CV014 47n
CV019 22u 50V
CV021 15n
CV020 15p
CV025 1n
RV026 33k
CV024 470n
RV022 2k2
JV111
LV012 33u
PB_FM
CV012 100n
CV013 33u 50V
PB_DE_EMPH
JV148
PB_YC
BV008
JV013
JV014
_MOD
GND
U2_+5VS
BV023
BV022
IIC_BUS_DATA_SW
IIC_BUS_CLOCK_SW
U2_+5VS
JV017 JV076 JV022 JV100 JV023 JV104 JV024 JV140 JV028 JV147 JV044 JV142
U2_+5VS REC_C GND PB_C Y/C_MIX PB_YC MESECAM
BV030 BV029 BV028 BV027 BV026 BV025 BV024
TO CHR_DLY SUB_MOD
MESECAM
JV004 JV019 JV003
PB_YC
JV204
BV131 PB_YC
RV132 1k
TV131 BC858/B
RV129 680R
RV131 1k8
TV130 BC848/C
RV130 1k
REC
DRUM_FF
TRICK
HA_SEL
VIDEO_ENV
COMPARATOR
(18) (9) (8) (7) (6) (4) (3) (13) (14)

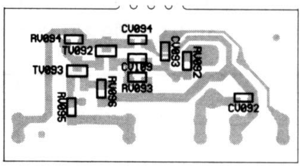


MAIN VIDEO		MODE		
LOC	**PIN**	**PLAY**	**REC**	**EE**
IV100	1	1.9	1.8	1.8
	2	5.0	5.0	4.9
	3	0	0	0
	4	0	0	0
	5	5.0	4.9	4.9
	6	3.4	3.4	3.3
	7	1.6	1.6	1.5
	8	10.0	10.0	10.0
	9	3.0	3.0	2.9
	10	4.9	4.9	4.9
	11	4.9	4.9	4.9
	12	0	0	0
	13	2.6	2.5	2.5
	14	0	0	0
	15	2.6	2.5	2.5
	16	2.4	2.4	2.3

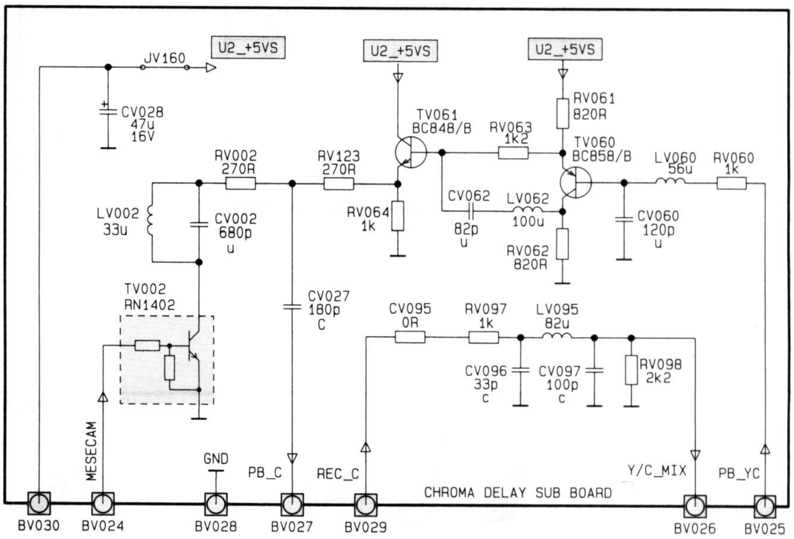
CCD amplifier sub board • Platine amplificateur CCD
CCD Verstärker Sub Modul


U2_+5VS
RV094
680R
TV092
BC848/B
CV094
100n
TV093
BC848/B
CV109
10n
RV092
470R
LV092
3u3
RV093
2k2
CV093
9p
CV092
33p
u
RV095
100R
RV096
560R
C_COMB_DRIVER
FSC
U2_+5VS
GND
CCD_C_COMB
SUB CCD AMP
BV093
BV090
BV094
BV091
BV092

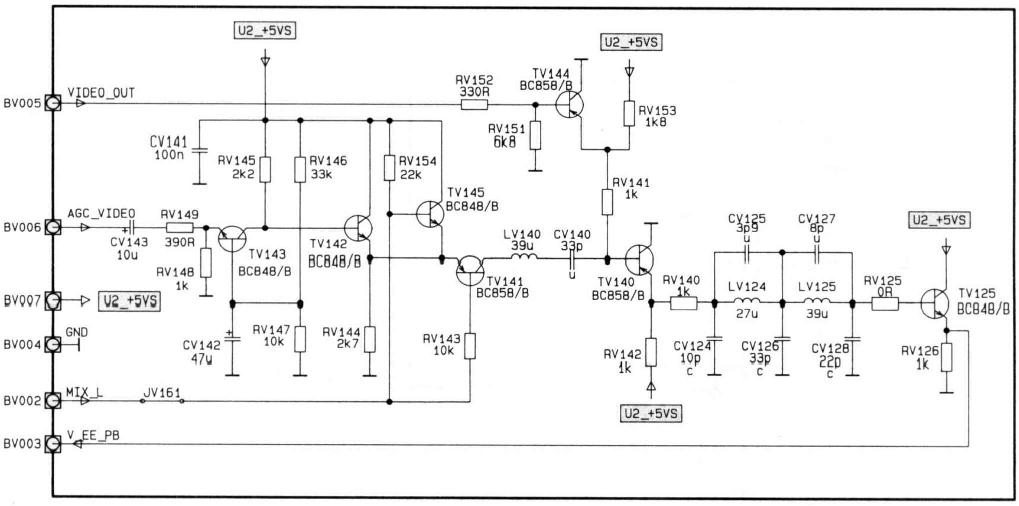

PCB CCD V3 J
20317240.SA
LV092
BV090
BV091
BV092
BV093
BV094

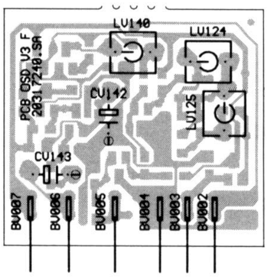

CV094
RV094
TV092
CV093
RV092
TV093
CV109
RV096
RV093
RV095
CV092

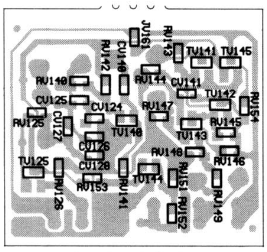
Chroma delay sub board • Platine retard chrominance • Chroma Delay Sub Modul
Piastra ritardo crominanza • Platina retardo crominancia

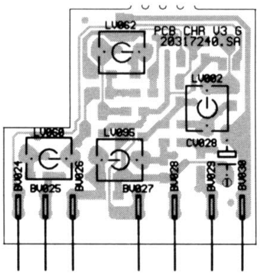

JV160
U2_+5VS
U2_+5VS
U2_+5VS
CV028
47u
16V
RV061
820R
TV061
BC848/B
RV063
1k2
TV060
BC858/B
RV002
270R
RV123
270R
LV060
56u
RV060
1k
LV002
33u
CV002
680p
u
RV064
1k
CV062
82p
u
LV062
100u
RV062
820R
CV060
120p
u
TV002
RN1402
CV027
180p
C
CV095
0R
RV097
1k
LV095
82u
CV096
33p
C
CV097
100p
C
RV098
2k2
MESECAM
GND
PB_C
REC_C
Y/C_MIX
PB_YC
CHROMA DELAY SUB BOARD
BV030
BV024
BV028
BV027
BV029
BV026
BV025

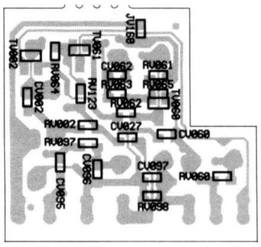
OSD mix sub board • Platine mélangeur OSD • OSD Mix Sub Modul
Piastra miscelazione OSD • Platina mezclador OSD

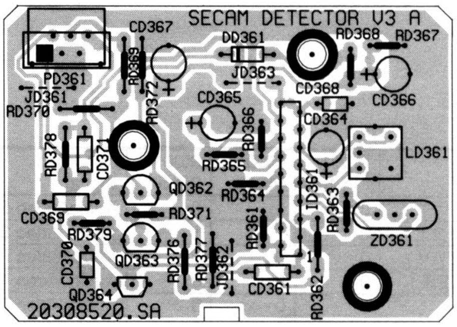

U2_+5VS
BV005
VIDEO_OUT
RV152
330R
TV144
BC858/B
RV153
1k8
RV151
6k8
CV141
100n
RV145
2k2
RV146
33k
RV154
22k
TV145
BC848/B
RV141
1k
AGC_VIDEO
RV149
BV006
CV143
10u
390R
TV143
BC848/B
TV142
BC848/B
RV148
1k
LV140
39u
CV140
33p
u
TV141
BC858/B
TV140
BC858/B
CV125
3p9
u
CV127
8p
u
BV007
RV140
1k
LV124
27u
LV125
39u
RV125
0R
TV125
BC848/B
GND
BV004
CV142
47u
RV147
10k
RV144
2k7
RV143
10k
RV142
1k
CV124
10p
c
CV126
33p
c
CV128
22p
c
RV126
1k
BV002
MIX_L
JV161
BV003
V_EE_PB


LV140
LV124
PCB OSD V3 F
20317240.SA
CV142
LV125
CV143
BV007
BV006
BV005
BV004
BV003
BV002

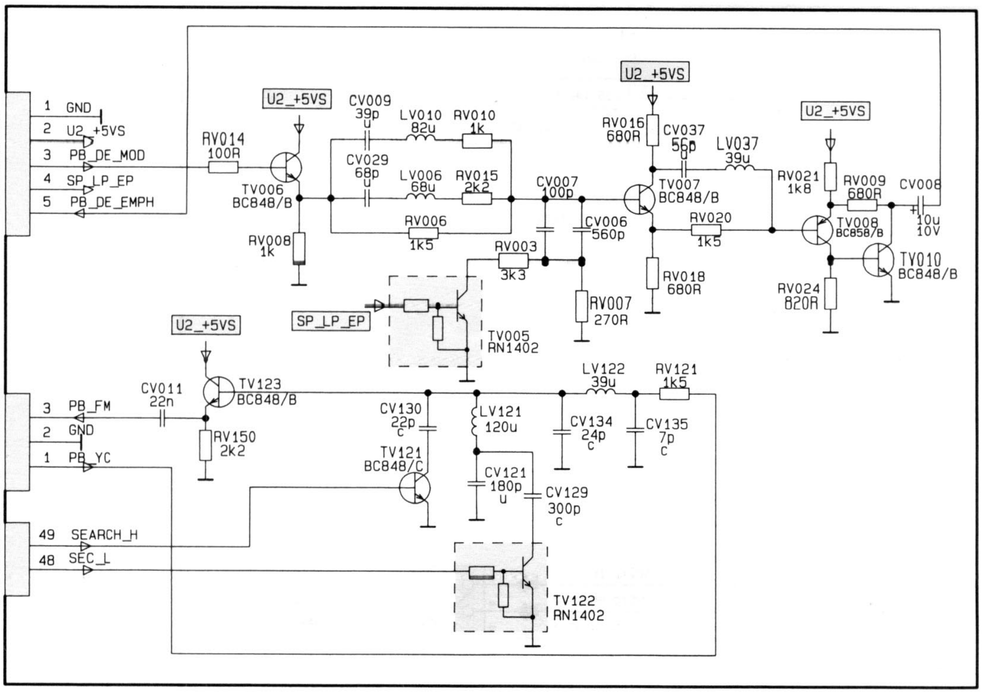

JV161
RV143
CV140
RV142
TV141
TV145
RV140
RV144
CV141
TV142
RV154
CV125
CV124
RV147
RV125
CV127
TV140
RV145
TV143
CV126
RV148
RV146
TV125
CV128
RV153
RV126
RV141
TV144
RV151
RV152
RV149

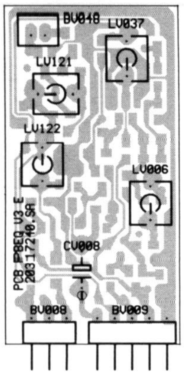

LV062
PCB CHR V3 G
20317240.SA
LV002
LV060
LV095
CV028
BV024
BV025
BV026
BV027
BV028
BV023
BV030

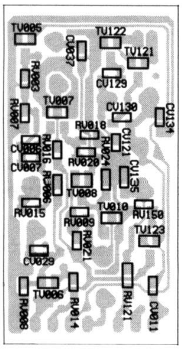

JV160
TV002
TV061
RV064
CV062
RV061
RV063
RV065
CV002
RV123
RV062
TV060
RV002
CV027
CV060
RV097
CV096
CV097
RV060
CV095
RV098


SECAM DETECTOR V3 A
CD367
DD361
RD368
RD367
PD361
RD369
RD372
JD363
CD368
CD366
JD361
RD370
CD365
CD364
RD366
LD361
RD378
CD371
RD365
QD362
RD364
ID361
RD363
CD369
RD371
RD361
ZD361
RD379
CD370
QD363
RD376
RD377
JD362
QD364
CD361
RD362
20308520.SA

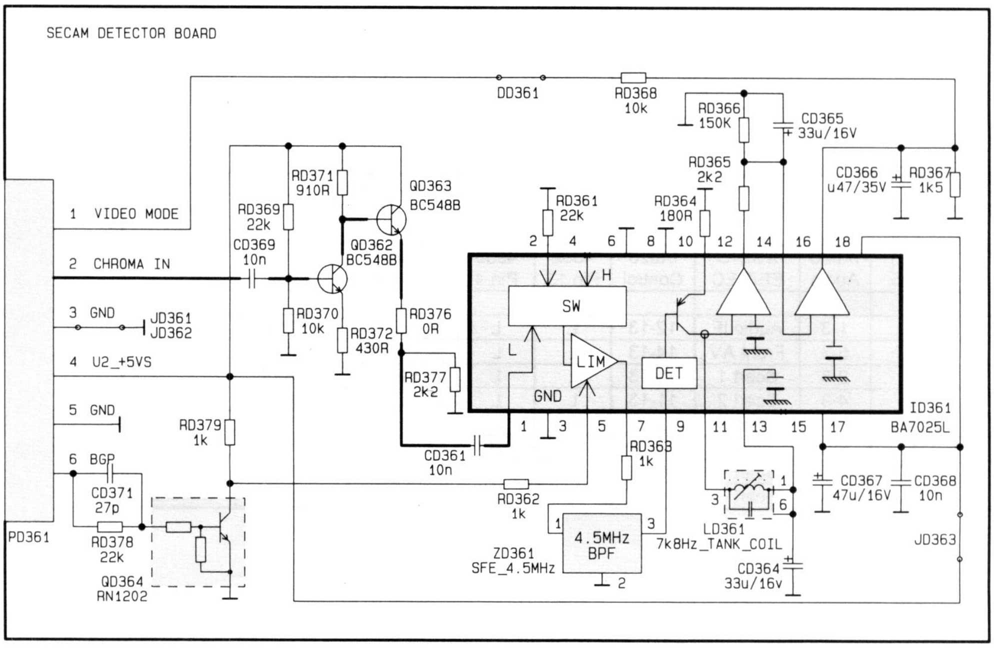
Playback equalizer sub board • Platine égaliseur de lecture • Wieddergabe Equalizer Sub Modul Piastra equalizzazione di lettura • Platina igualizador


BV009 TO MAINBOARD
1 GND
2 U2_+5VS
3 PB_DE_MOD
4 SP_LP_EP
5 PB_DE_EMPH
U2_+5VS
RV014 100R
TV006 BC848/B
RV008 1k
CV009 39p u
LV010 82u
RV010 1k
CV029 68p u
LV006 68u
RV015 2k2
RV006 1k5
CV007 100p
RV003 3k3
SP_LP_EP
TV005 RN1402
U2_+5VS
RV016 680R
CV037 56p
LV037 39u
TV007 BC848/B
CV006 560p
RV020 1k5
RV018 680R
RV007 270R
U2_+5VS
RV021 1k8
RV009 680R
CV008 10u 10V
TV008 BC858/B
TV010 BC848/B
RV024 820R
BV008 TO MAINBOARD
3 PB_FM
2 GND
1 PB_YC
U2_+5VS
CV011 22n
TV123 BC848/B
RV150 2k2
CV130 22p c
TV121 BC848/C
LV121 120u
CV121 180p u
CV129 300p c
LV122 39u
RV121 1k5
CV134 24p c
CV135 7p c
BV048 TO MAINBOARD
49 SEARCH_H
48 SEC_L
TV122 RN1402

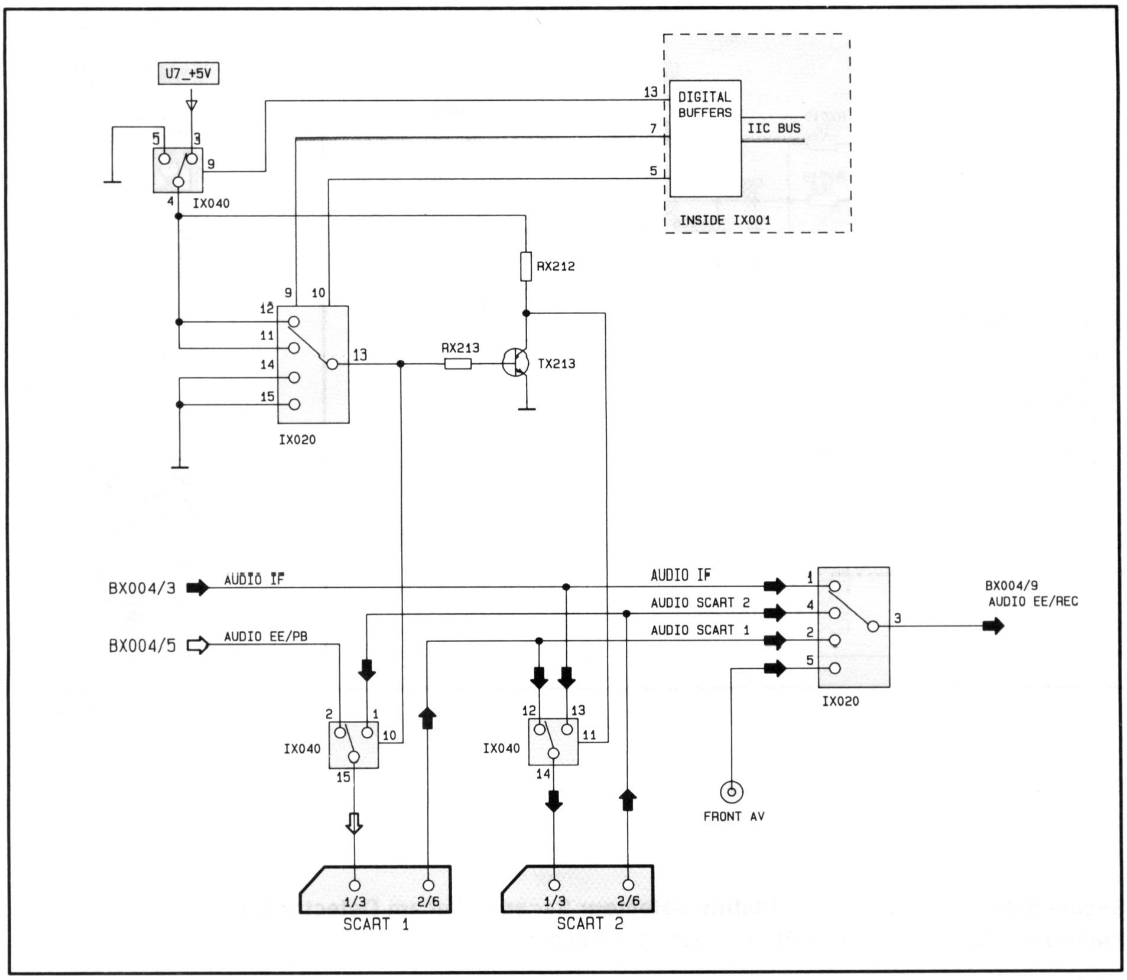

BV048
LV037
LV121
LV122
LV006
CV008
BV008
BV009


TV006
TV122
TV121
CV129
TV007
CV130
CV134
CV007
RV018
TV008
CV135
TV010
RV150
RV015
RV009
TV123
CV029
RV021
TV006
RV014
RV121
CV011
RV008

Secam detection sub board • Platine détecteur Secam • Secam Detector Sub Modul Piastra rivelazione Secam • Platina detector Secam

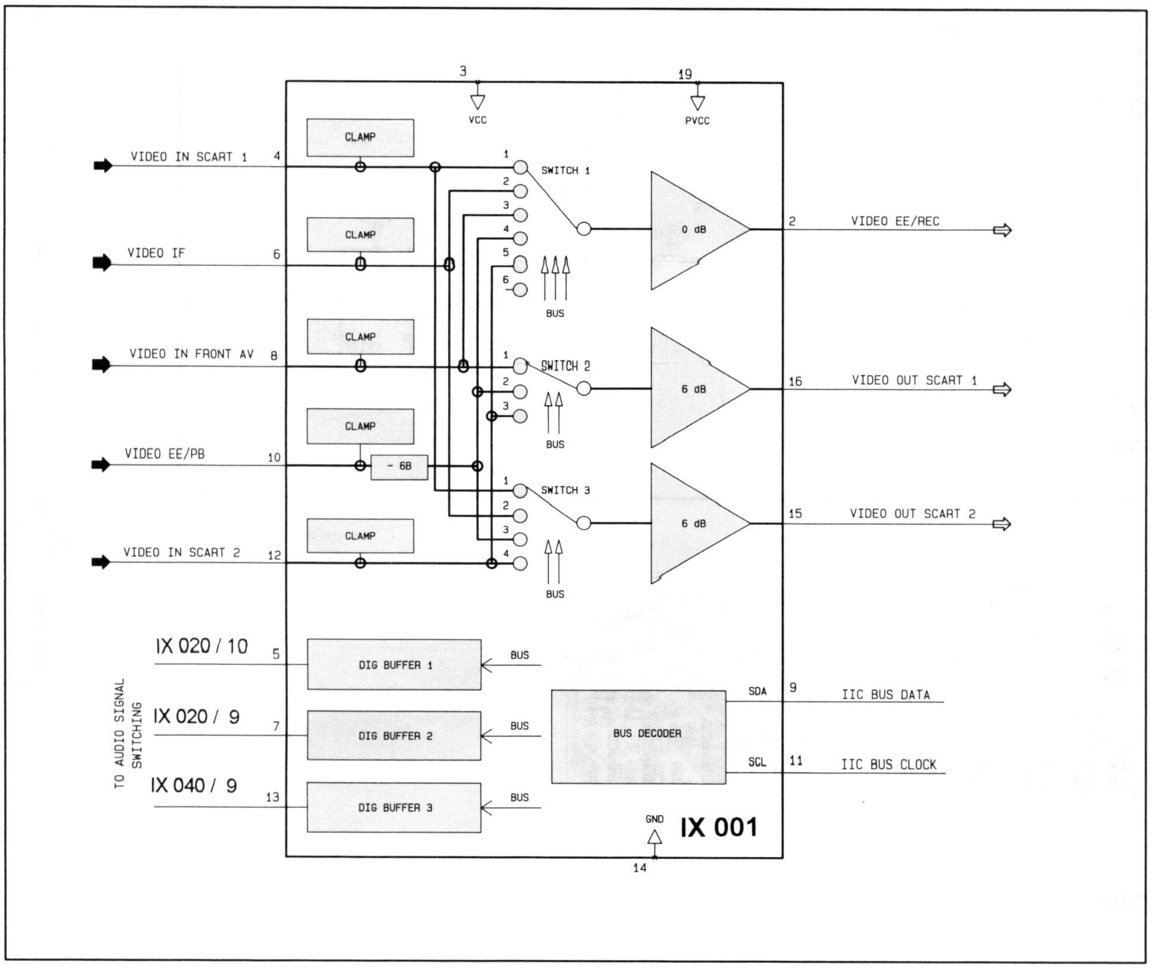

SECAM DETECTOR BOARD
PD361
1 VIDEO MODE
2 CHROMA IN
3 GND
JD361
JD362
4 U2_+5VS
5 GND
6 BGP
CD371 27p
RD378 22k
QD364 RN1202
RD379 1k
RD369 22k
CD369 10n
RD371 910R
QD363 BC548B
QD362 BC548B
RD370 10k
RD372 430R
RD376 0R
RD377 2k2
CD361 10n
RD362 1k
DD361
RD368 10k
RD366 150K
CD365 33u/16V
RD365 2k2
RD361 22k
RD364 180R
CD366 u47/35V
RD367 1k5
SW
H
L
LIM
DET
GND
ID361 BA7025L
RD363 1k
ZD361 SFE_4.5MHz
4.5MHz BPF
LD361 7k8Hz_TANK_COIL
CD364 33u/16v
CD367 47u/16V
CD368 10n
JD363

Block diagram Audio selection • Synoptique des commutations audio • Blockschaltbild Audio Umschaltung
Schema a blocchi dei commutazioni audio • Esquema de bloques de las conmutaciones


U7_+5V
5
3
9
4
IX040
13
7
5
DIGITAL BUFFERS
IIC BUS
INSIDE IX001
RX212
9
10
12
11
14
15
13
IX020
RX213
TX213
BX004/3
AUDIO IF
BX004/5
AUDIO EE/PB
AUDIO IF
AUDIO SCART 2
AUDIO SCART 1
1
4
2
5
3
IX020
BX004/9
AUDIO EE/REC
2
1
10
IX040
15
12
13
11
IX040
14
FRONT AV
1/3
2/6
SCART 1
1/3
2/6
SCART 2

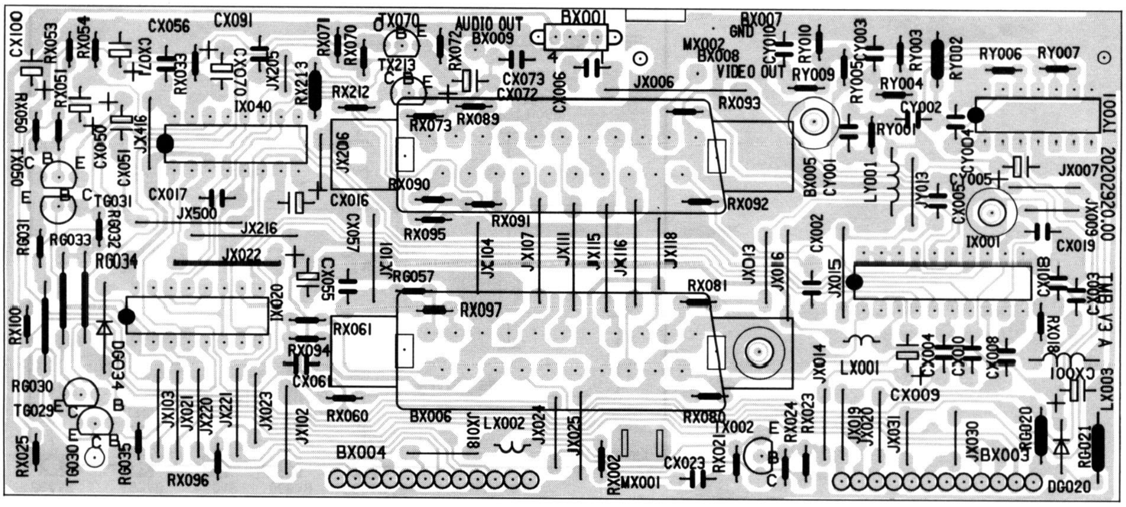
From IX001 Digital Buffer				Signal for RECORD		IX020	IX040	Signal to Output		Special Function
IX001 Pin 13	IX001 Pin 7	IX001 Pin 5	IX020 Audio	AUDIO EE/REC	IX020 Control	4052 Pin 13	4053 Pin 4	Scart 1 Output	Scart 2 Output	
0	0	0	1-3	Audio IF	12-13	L	L	A_EE/PB	Audio IF	
0	0	1	5-3	Front AV	14-13	L	L	A_EE/PB	Audio IF	
0	1	0	2-3	Scart 1	15-13	L	L	A_EE/PB	Audio IF	
0	1	1	4-3	Scart 2	11-13	L	L	A_EE/PB	Audio IF	Decoder
1	0	0	1-3	Audio IF	12-13	H	H	Scart 2 IN	Scart 1 IN	Monitor
1	0	1	5-3	Front AV	14-13	H	H	Scart 2 IN	Scart 1 IN	Monitor
1	1	0	2-3	Scart 1	15-13	L	H	A_EE/PB	Audio IF	
1	1	1	4-3	Scart 2	11-13	L	H	A_EE/PB	Audio IF	Decoder

Block diagram Video selection • Synoptique des commutations video • Blockschaltbild Video Umschaltung Schema a blocchi dei commutazioni video • Esquema de bloques de las conmutaciones video


3
VCC
19
PVCC
VIDEO IN SCART 1
4
CLAMP
VIDEO IF
6
CLAMP
VIDEO IN FRONT AV
8
CLAMP
VIDEO EE/PB
10
CLAMP
- 6B
VIDEO IN SCART 2
12
CLAMP
1
2
3
4
5
6
SWITCH 1
BUS
1
2
3
SWITCH 2
BUS
1
2
3
4
SWITCH 3
BUS
0 dB
6 dB
6 dB
2
VIDEO EE/REC
16
VIDEO OUT SCART 1
15
VIDEO OUT SCART 2
TO AUDIO SIGNAL SWITCHING
IX 020 / 10
5
DIG BUFFER 1
BUS
IX 020 / 9
7
DIG BUFFER 2
BUS
IX 040 / 9
13
DIG BUFFER 3
BUS
BUS DECODER
SDA
9
IIC BUS DATA
SCL
11
IIC BUS CLOCK
GND
14
IX 001

Selected Mode	IX001 Pin 13	IX001 Pin 7	IX001 Pin 5	Recorded Signal
AV 1 (Scart 1)	0	1	0	Audio/Video Scart 1
AV 2 (Scart 2)	0	1	1	Audio/Video Scart 2
AV 3 (Front AV)	0	0	1	Audio/Video Front AV
PR -- (TUNER)	0	0	0	Audio/Video Tuner
Monitor A	1	0	0	Audio/Video Tuner
Monitor B	1	0	1	Audio/Video Front AV

Scart connection board • Platine prises Scart • Leiterplatte Scart Anschlußplatte
Piastra Scart • Platina Scart

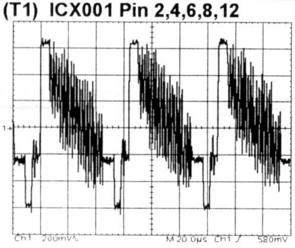

CX100
RX053
RX054
CX056
CX091
RX071
RX070
TX070
AUDIO OUT
BX009
BX001
BX007
GND
MX002
BX008
VIDEO OUT
CY010
RY010
RY009
RY005
CY003
RY003
RY002
RY004
RY006
RY007
RX060
RX051
CX071
RX033
CX070
JX205
RX213
RX212
TX213
RX072
CX073
CX072
CX006
JX006
RX093
IX040
RX073
RX089
CY002
RY001
IY001
050X1
CX050
CX051
JX416
JX206
BX005
CY001
LY001
JY013
CX005
CY005
CY004
JX007
JX009
2020292000
E
B
C
TG031
CX017
JX500
RX090
CX016
RX092
IX001
CX019
RG031
RG033
RG032
RG034
JX216
JX022
CX057
RX095
RX091
JX101
JX104
JX107
JX111
JX115
JX116
JX118
JXD13
JX016
CX002
JX015
CX018
TMB V3 A
RX100
RG057
CX055
RX097
RX081
RX018
CX003
IX020
RX061
RX094
DG034
LX001
CX004
CX010
CX008
LX003
IX003
RG030
TG029
CX061
JX103
JX021
JX220
JX221
JX023
JX102
RX060
BX006
LX002
JX018
JX024
JX025
RX080
TX002
RX024
RX023
JX014
JX019
JX020
JX031
JX030
RG020
RG021
CX009
RX025
TG030
RG035
RX096
BX004
RX002
MX001
CX023
RX021
BX003
DG020

Measurements Scart connection board • Mesures platine prises Scart • Messungen Scart Anschlußplatte
Misuri piastra Scart • Medidas platina Scart

TERMINAL BOARD		MODE		
LOC	PIN	PLAY	REC	EE
IX001	1	N.C.	N.C.	N.C.
	2	1.1	0.9	1.1
	3	5.1	5.0	5.0
	4	1.3	1.1	1.1
	5	0	0	0
	6	1.7	1.5	1.6
	7	0	0	0
	8	1.3	1.1	1.3
	9	4.8	4.6	4.6
	10	3.1	2.9	3.1
	11	4.8	4.8	4.8
	12	1.3	1.1	1.3
	13	0	0	0
	14	0	0	0
	15	0.7	0.5	0.7
	16	1.7	1.5	1.7
	17	N.C.	N.C.	N.C.
	18	5.1	5.1	5.1
	19	5.1	5.1	5.1
	20	5.1	5.1	5.1

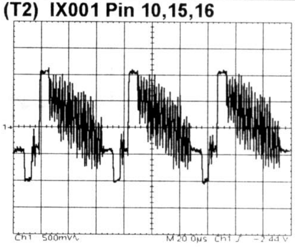
TERMINAL BOARD		MODE		
LOC	PIN	PLAY	ECOR	EE
TX002	E	1.9	1.8	1.9
	B	2.5	2.6	2.5
	C	5.1	5.0	5.1
TX213	E	0	0	0
	B	0	0	0
	C	0	0	0
TX050	E	5.7	5.7	5.7
	B	6.3	6.5	6.3
	C	12.2	12.2	12.2
TX070	E	5.9	5.9	5.9
	B	6.5	6.5	6.5
	C	12.2	12.2	12.2
TG030	E	0	0	0
	B	4.4	4.3	4.4
	C	0	0	0
TG031	E	12.2	12.2	12.2
	B	11.3	11.3	11.3
	C	12.2	12.2	12.2

(T1) ICX001 Pin 2,4,6,8,12



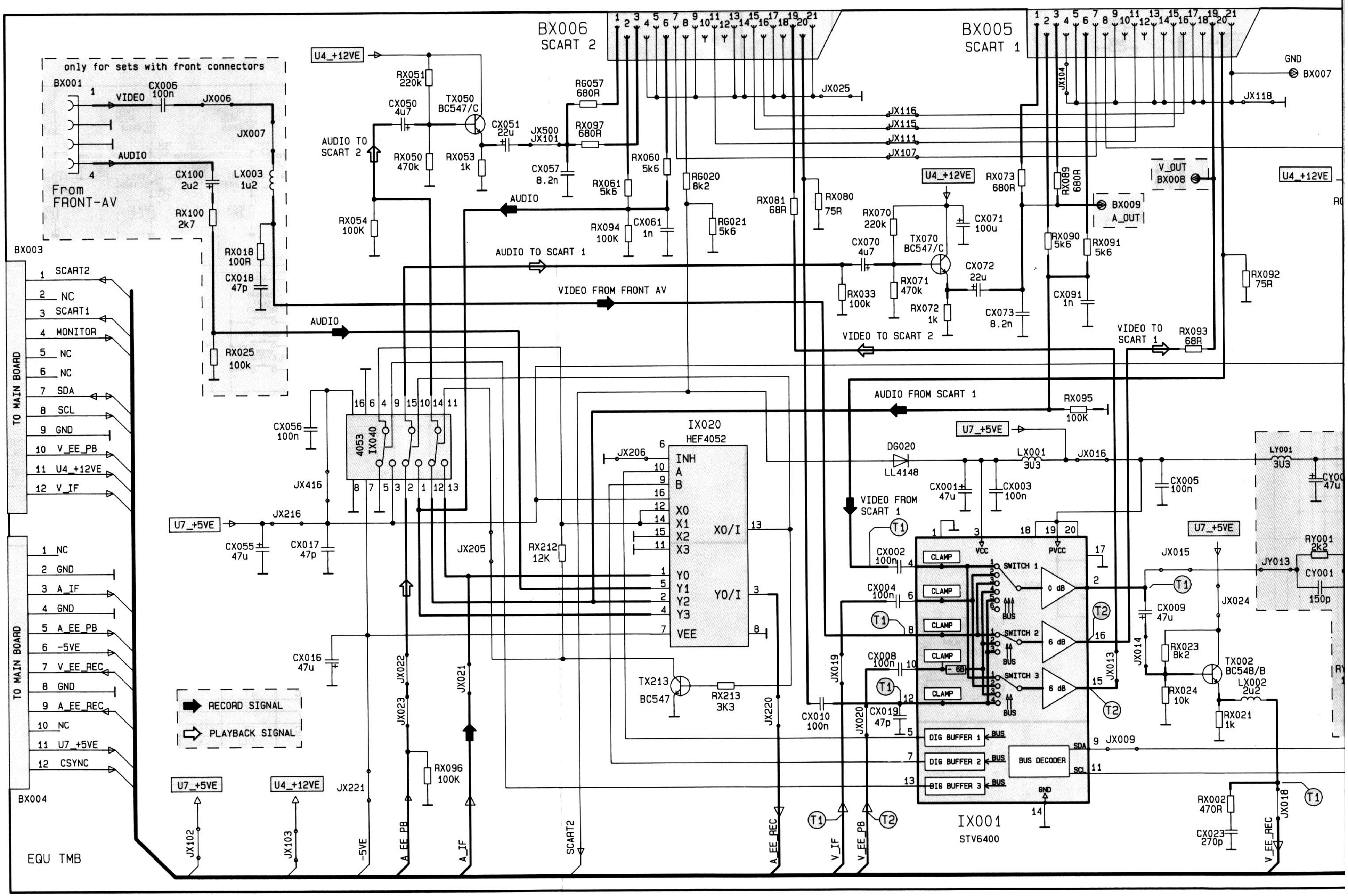
V:200mV/div
H:20µs/div

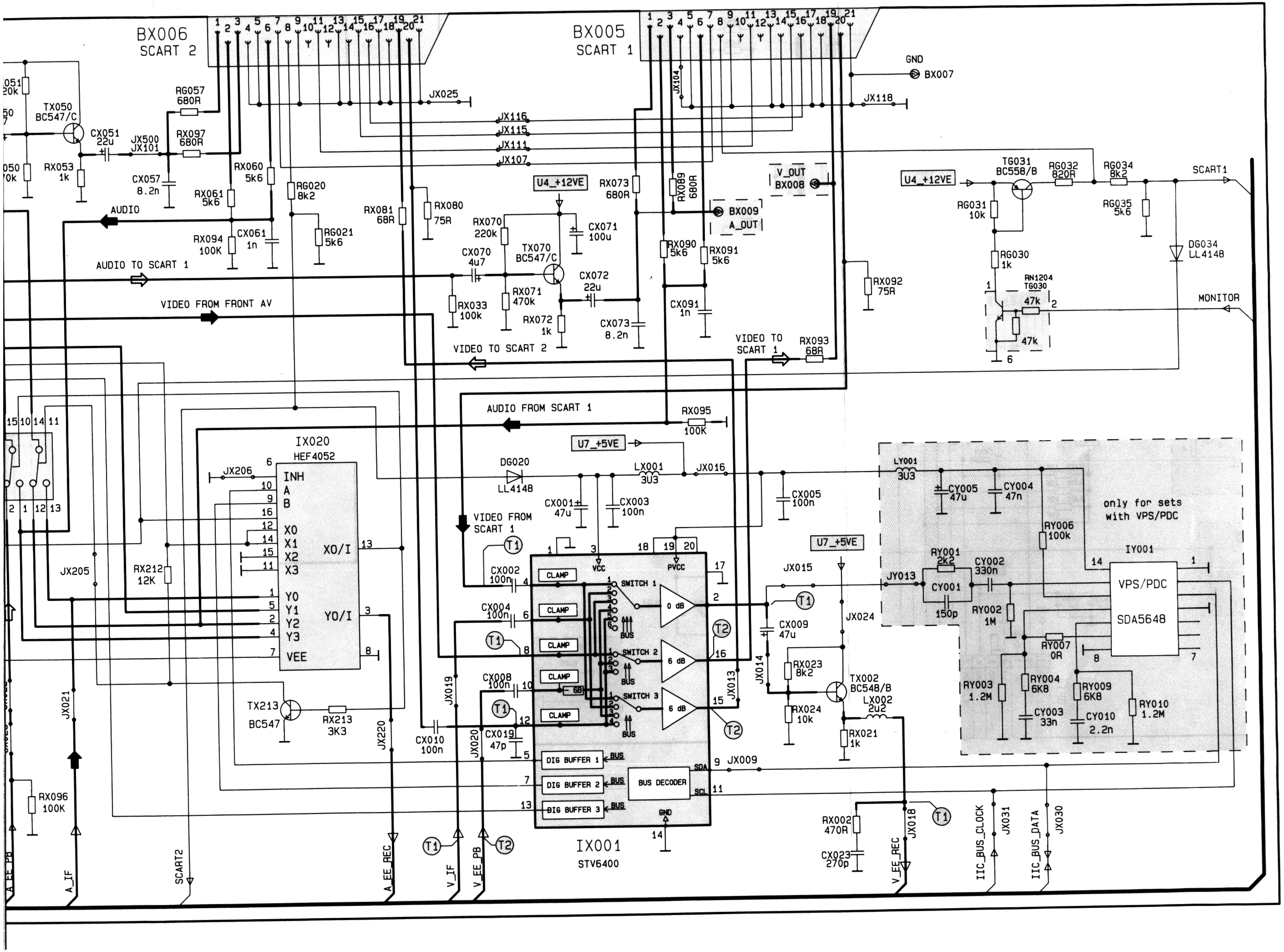
(T2) IX001 Pin 10,15,16



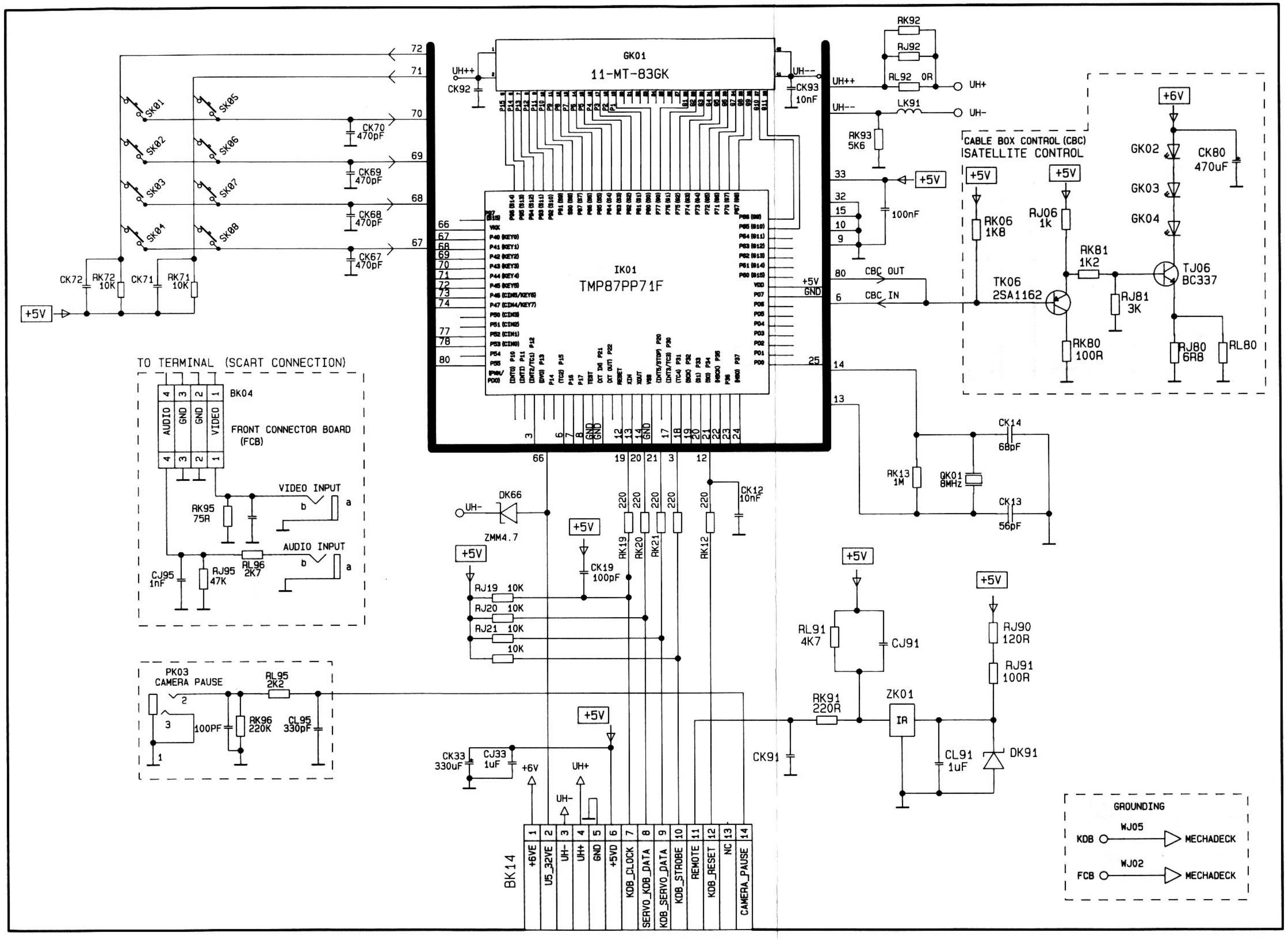
V:500mV/div
H:20µs/div

Scart connection board • Platine prises Scart • Scart Anschlußplatte
Piastra Scart • Platina Scart


only for sets with front connectors
BX001
VIDEO
CX006
100n
JX006
JX007
AUDIO
CX100
2u2
LX003
1u2
RX100
2k7
From
FRONT-AV
RX018
100R
CX018
47p
RX025
100k
BX003
1 SCART2
2 NC
3 SCART1
4 MONITOR
5 NC
6 NC
7 SDA
8 SCL
9 GND
10 V_EE_PB
11 U4_+12VE
12 V_IF
TO MAIN BOARD
1 NC
2 GND
3 A_IF
4 GND
5 A_EE_PB
6 -5VE
7 V_EE_REC
8 GND
9 A_EE_REC
10 NC
11 U7_+5VE
12 CSYNC
TO MAIN BOARD
BX004
EQU TMB
U4_+12VE
RX051
220k
CX050
4u7
TX050
BC547/C
CX051
22u
JX500
JX101
AUDIO TO
SCART 2
RX050
470k
RX053
1k
RX054
100K
AUDIO
AUDIO TO SCART 1
VIDEO FROM FRONT AV
AUDIO
BX006
SCART 2
RG057
680R
RX097
680R
CX057
8.2n
RX060
5k6
RX061
5k6
RX094
100k
CX061
1n
RG020
8k2
RG021
5k6
JX025
JX116
JX115
JX111
JX107
RX081
68R
RX080
75R
RX070
220k
CX070
4u7
TX070
BC547/C
U4_+12VE
CX071
100u
RX073
680R
RX033
100k
RX071
470k
RX072
1k
CX072
22u
CX073
8.2n
VIDEO TO SCART 2
BX005
SCART 1
JX104
RX089
680R
V_OUT
BX008
BX009
A_OUT
RX090
5k6
RX091
5k6
CX091
1n
GND
BX007
JX118
U4_+12VE
RX092
75R
VIDEO TO
SCART 1
RX093
68R
CX056
100n
4053
IX040
16 6 4 9 15 10 14 11
8 7 5 3 2 1 12 13
JX416
U7_+5VE
JX216
CX055
47u
CX017
47p
JX205
CX016
47u
JX022
JX023
JX021
RX096
100K
JX221
RECORD SIGNAL
PLAYBACK SIGNAL
U7_+5VE
U4_+12VE
JX102
JX103
-5VE
A_EE_PB
A_IF
SCART2
JX206
IX020
HEF4052
INH
A
B
X0
X1
X2
X3
X0/I
Y0
Y1
Y2
Y3
Y0/I
VEE
RX212
12K
TX213
BC547
RX213
3K3
JX220
A_EE_REC
AUDIO FROM SCART 1
RX095
100K
U7_+5VE
DG020
LL4148
LX001
3U3
JX016
CX001
47u
CX003
100n
CX005
100n
VIDEO FROM
SCART 1
T1
CX002
100n
CX004
100n
CX008
100n
CX010
100n
CX019
47p
JX019
JX020
CLAMP
SWITCH 1
SWITCH 2
SWITCH 3
0 dB
6 dB
6 dB
6B
BUS
VCC
PVCC
DIG BUFFER 1
DIG BUFFER 2
DIG BUFFER 3
BUS DECODER
SDA
SCL
GND
IX001
STV6400
T2
JX013
JX009
V_IF
V_EE_PB
U7_+5VE
JX015
CX009
47u
JX014
JX024
RX023
8k2
TX002
BC548/B
LX002
2u2
RX024
10k
RX021
1k
RX002
470R
CX023
270p
JX018
V_EE_REC
LY001
3U3
CY00
47u
RY001
2k2
JY013
CY001
150p


BX006
SCART 2
BX005
SCART 1
GND
BX007
JX025
JX104
JX118
JX116
JX115
JX111
JX107
TX050
BC547/C
CX051
22u
JX500
JX101
RG057
680R
RX097
680R
RX053
1k
CX057
8.2n
RX060
5k6
RX061
5k6
RG020
8k2
AUDIO
RX094
100K
CX061
1n
RG021
5k6
RX081
68R
RX080
75R
U4_+12VE
RX073
680R
RX089
680R
V_OUT
BX008
BX009
A_OUT
AUDIO TO SCART 1
RX070
220k
CX071
100u
CX070
4u7
TX070
BC547/C
CX072
22u
RX090
5k6
RX091
5k6
RX033
100k
RX071
470k
RX072
1k
CX073
8.2n
CX091
1n
RX092
75R
VIDEO FROM FRONT AV
VIDEO TO SCART 2
VIDEO TO SCART 1
RX093
68R
U4_+12VE
TG031
BC558/B
RG032
820R
RG034
8k2
SCART1
RG031
10k
RG035
5k6
RG030
1k
DG034
LL4148
RN1204
TG030
47k
47k
MONITOR
AUDIO FROM SCART 1
RX095
100K
U7_+5VE
IX020
HEF4052
JX206
INH
A
B
X0
X1
X2
X3
X0/I
Y0
Y1
Y2
Y3
Y0/I
VEE
DG020
LL4148
LX001
3U3
JX016
CX001
47u
CX003
100n
CX005
100n
LY001
3U3
CY005
47u
CY004
47n
only for sets with VPS/PDC
RY006
100k
IY001
VIDEO FROM SCART 1
T1
T2
JX205
RX212
12K
CX002
100n
CLAMP
SWITCH 1
SWITCH 2
SWITCH 3
0 dB
6 dB
6 dB
VCC
PVCC
BUS
CX004
100n
CX008
100n
-6B
CX019
47p
CX010
100n
DIG BUFFER 1
DIG BUFFER 2
DIG BUFFER 3
BUS DECODER
SDA
SCL
GND
IX001
STV6400
U7_+5VE
JX015
JY013
RY001
2k2
CY001
150p
CY002
330n
RY002
1M
VPS/PDC
SDA5648
RY007
0R
RY003
1.2M
RY004
6K8
RY009
6K8
CY003
33n
CY010
2.2n
RY010
1.2M
CX009
47u
JX024
JX014
JX013
RX023
8k2
TX002
BC548/B
LX002
2u2
RX024
10k
RX021
1k
JX009
RX002
470R
CX023
270p
JX018
TX213
BC547
RX213
3K3
JX021
JX220
JX019
JX020
RX096
100K
A_EE_PB
A_IF
SCART2
A_EE_REC
V_IF
V_EE_PB
V_EE_REC
IIC_BUS_CLOCK
JX031
IIC_BUS_DATA
JX030

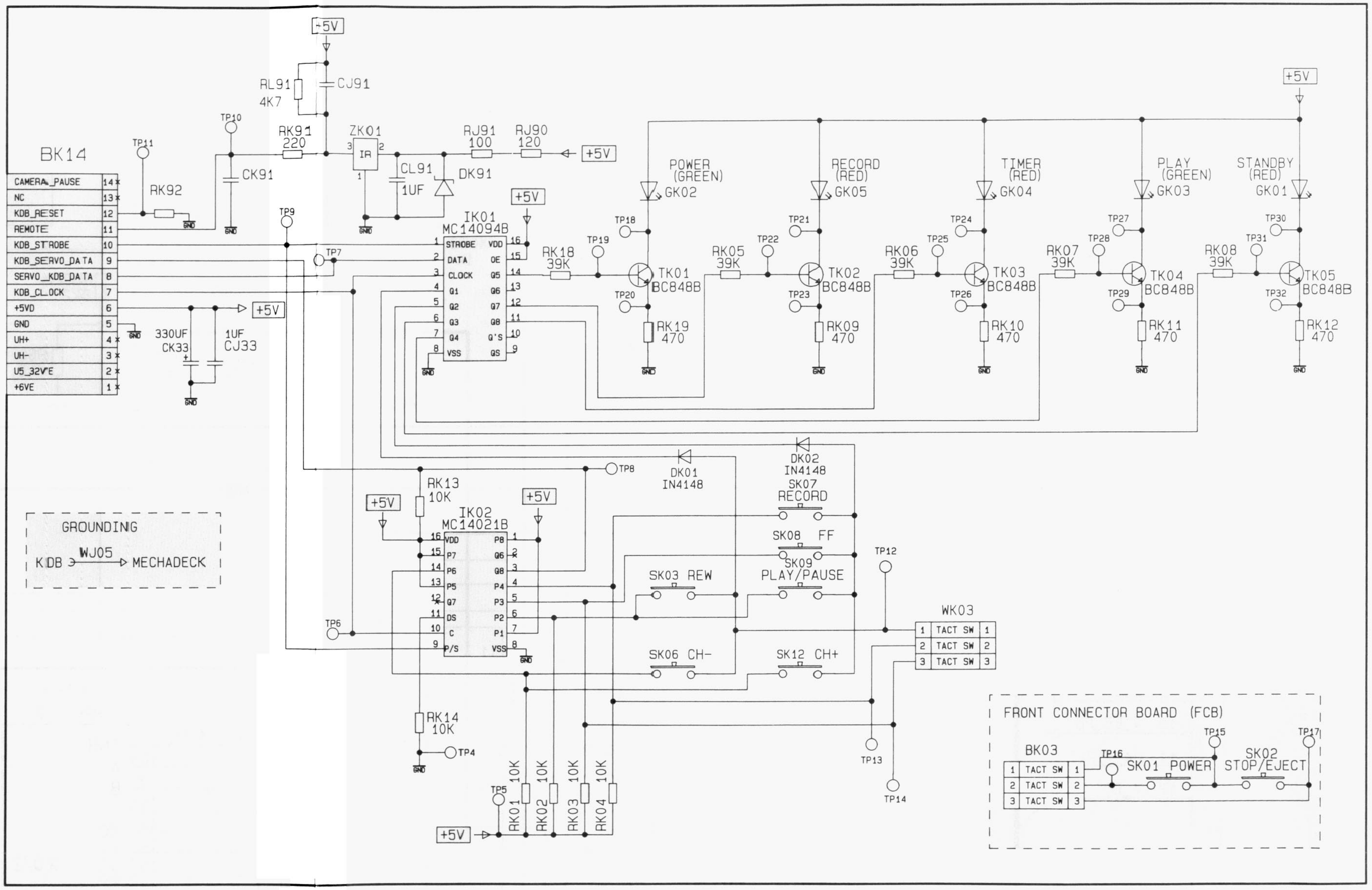
Keyboard with display • Platine de commandes avec afficheur • Bedienteil mit Display
Tastiera con display • Platina mandos con visualizador


GK01
11-MT-83GK
IK01
TMP87PP71F
SK01
SK02
SK03
SK04
SK05
SK06
SK07
SK08
CK70 470pF
CK69 470pF
CK68 470pF
CK67 470pF
CK72
RK72 10K
CK71
RK71 10K
+5V
UH++
CK92
UH--
CK93 10nF
RK92
RJ92
RL92 0R
UH+
UH-
LK91
RK93 5K6
100nF
CBC OUT
CBC IN
CABLE BOX CONTROL (CBC)
SATELLITE CONTROL
+6V
GK02
GK03
GK04
CK80 470uF
RK06 1K8
RJ06 1k
RK81 1K2
TK06 2SA1162
TJ06 BC337
RJ81 3K
RK80 100R
RJ80 6R8
RL80
CK14 68pF
CK13 56pF
RK13 1M
QK01 8MHz
TO TERMINAL (SCART CONNECTION)
BK04
AUDIO
GND
GND
VIDEO
FRONT CONNECTOR BOARD (FCB)
VIDEO INPUT
AUDIO INPUT
RK95 75R
RL96 2K7
RJ95 47K
CJ95 1nF
DK66
ZMM4.7
RJ19 10K
RJ20 10K
RJ21 10K
10K
CK19 100pF
RK19 220
RK20 220
RK21 220
RK12 220
CK12 10nF
PK03
CAMERA PAUSE
RL95 2K2
100PF
RK96 220K
CL95 330pF
CK33 330uF
CJ33 1uF
+6V
RL91 4K7
CJ91
RK91 220R
ZK01
IR
CK91
CL91 1uF
DK91
RJ90 120R
RJ91 100R
GROUNDING
KDB
WJ05
MECHADECK
FCB
WJ02
MECHADECK
BK14
+6VE
U5_32VE
UH-
UH+
GND
+5VD
KDB_CLOCK
SERVO_KDB_DATA
KDB_SERVO_DATA
KDB_STROBE
REMOTE
KDB_RESET
NC
CAMERA_PAUSE

Function of the keys on the various Key Display Board versions
Fonction des touches sur les différentes versions de platines de commandes.
Funktion der Tasten bei den verschiedenen Bedienteil - Versionen

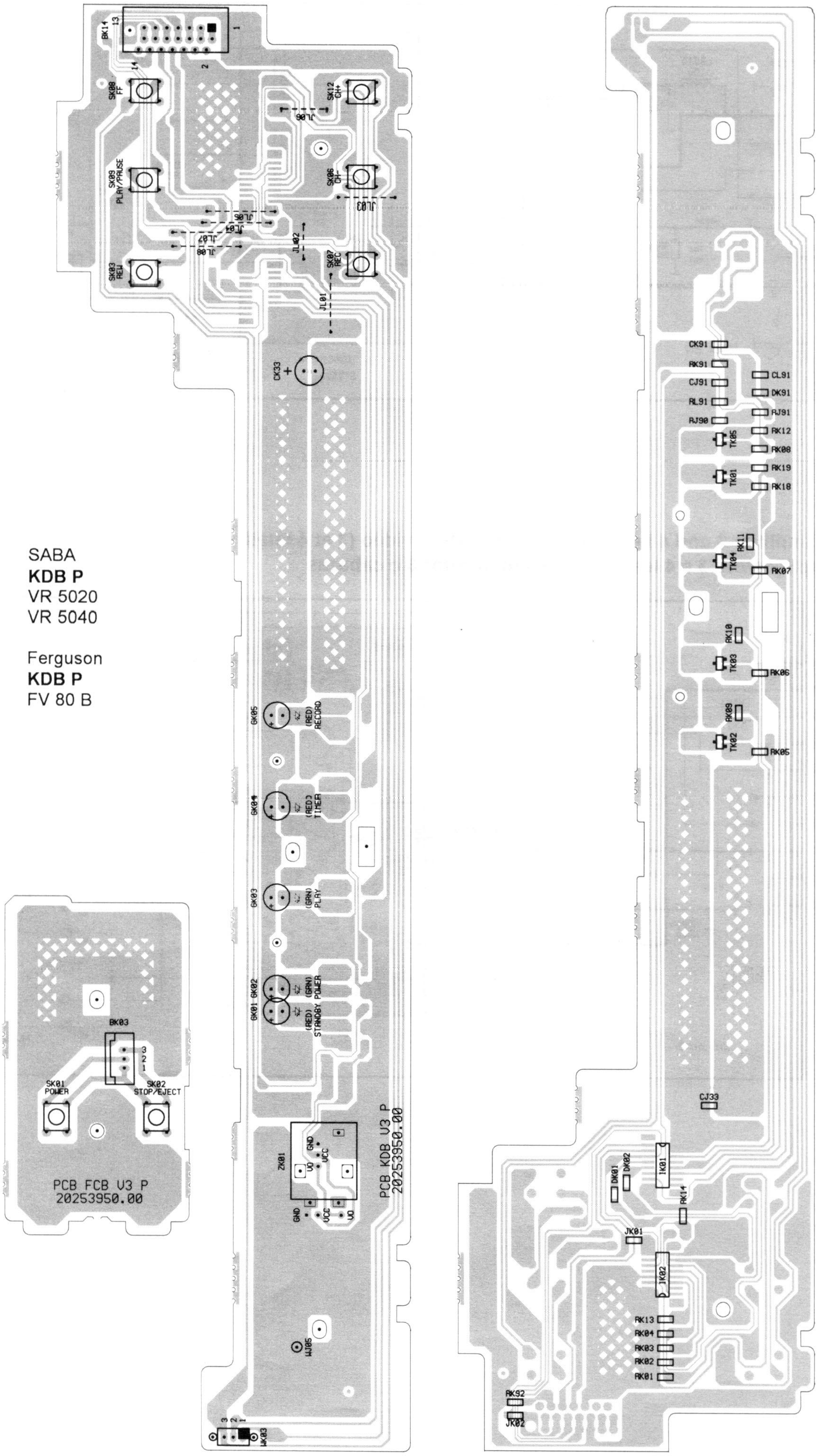
KDB	Brand	Function of the key							
		SK01	SK02	SK03	SK04	SK05	SK06	SK07	SK08
L	Thomson / Nordmende	REC	PLAY/PAUSE	CH+	STAND BY	F.REW	F.FWD	CH-	STOP/EJECT
M	Telefunken	STOP/EJECT	F.FWD	PLAY/PAUSE	F.REW	STAND BY	CH+	CH-	REC
N	Saba / Brandt	STOP/EJECT	F.FWD	PLAY/PAUSE	F.REW	STAND BY	CH+	CH-	REC
Q	Ferguson	REC	PLAY/PAUSE	CH+	STAND BY	F.REW	F.FWD	CH-	STOP/EJECT

Keyboard LED (without display) • Platine de commandes LED (sans afficheur) • Bedienteil LED (ohne Display) Tastiera LED (senza display) • Platina mandos LED (sin visualizador)



BK14
CAMERA_PAUSE 14
NC 13
KDB_RESET 12
REMOTE 11
KDB_STROBE 10
KDB_SERVO_DATA 9
SERVO_KDB_DATA 8
KDB_CLOCK 7
+5VD 6
GND 5
UH+ 4
UH- 3
U5_32VE 2
+6VE 1
+5V
RL91 4K7
CJ91
TP10
TP11
RK92
CK91
RK91 220
ZK01
IR
CL91 1UF
DK91
RJ91 100
RJ90 120
TP9
TP7
IK01 MC14094B
STROBE VDD
DATA OE
CLOCK Q5
Q1 Q6
Q2 Q7
Q3 Q8
Q4 Q'S
VSS QS
330UF CK33
1UF CJ33
POWER (GREEN) GK02
RECORD (RED) GK05
TIMER (RED) GK04
PLAY (GREEN) GK03
STANDBY (RED) GK01
RK18 39K
RK05 39K
RK06 39K
RK07 39K
RK08 39K
TK01 BC848B
TK02 BC848B
TK03 BC848B
TK04 BC848B
TK05 BC848B
RK19 470
RK09 470
RK10 470
RK11 470
RK12 470
TP18 TP19 TP20 TP21 TP22 TP23 TP24 TP25 TP26 TP27 TP28 TP29 TP30 TP31 TP32
GND
TP8
DK01 IN4148
DK02 IN4148
SK07 RECORD
SK08 FF
SK09 PLAY/PAUSE
SK03 REW
SK06 CH-
SK12 CH+
RK13 10K
IK02 MC14021B
VDD P8
P7 Q6
P6 Q8
P5 P4
Q7 P3
DS P2
C P1
P/S VSS
TP6
TP12
WK03
TACT SW
TP13
TP14
RK14 10K
TP4
TP5
RK01 10K
RK02 10K
RK03 10K
RK04 10K
GROUNDING
KDB WJ05 MECHADECK
FRONT CONNECTOR BOARD (FCB)
BK03
TP15 TP16 TP17
SK01 POWER
SK02 STOP/EJECT

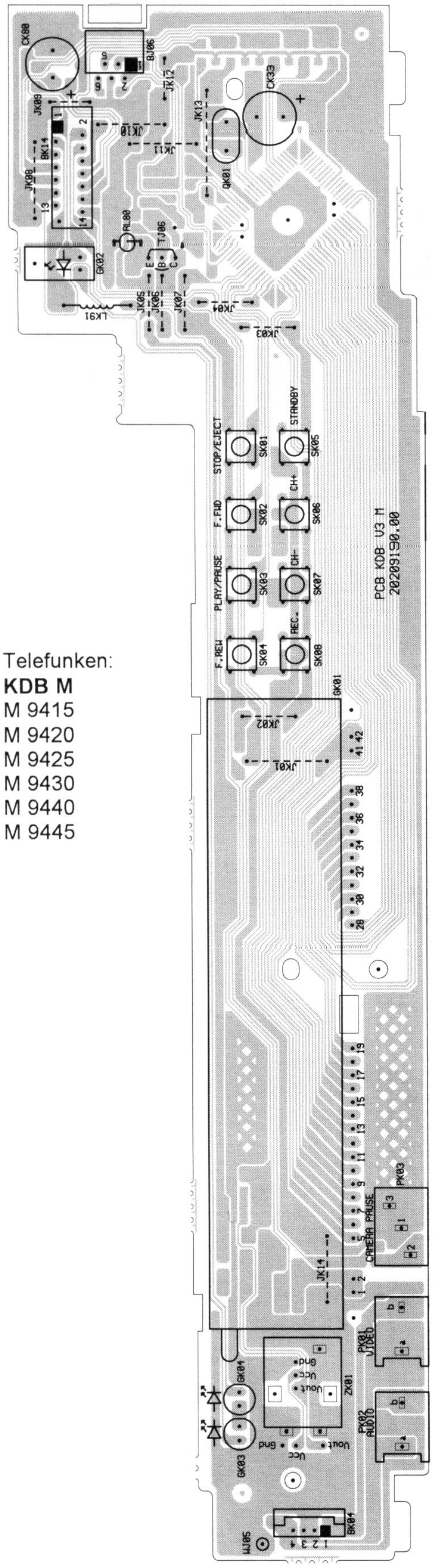
Keyboard LED (without display) • Platine de commandes LED (sans afficheur) • Bedienteil LED (ohne Display)
Tastiera LED (senza display) • Platina mandos LED (sin visualizador)


BK14
13
14
1
2
SK08 FF
SK12 CH+
JL06
SK09 PLAY/PAUSE
SK06 CH-
JL03
JL05
JL04
JL07
JL08
JL02
SK03 REW
SK07 REC
JL01
CK33
GK05 (RED) RECORD
GK04 (RED) TIMER
GK03 (GRN) PLAY
GK01 GK02 (RED) (GRN) STANDBY POWER
ZK01
GND
VO
VCC
PCB KDB V3 P
20253950.00
WJ05
WK03
3
2
1
BK03
SK01 POWER
SK02 STOP/EJECT
PCB FCB V3 P
20253950.00
CK91
RK91
CJ91
RL91
RJ90
CL91
DK91
RJ91
RK12
RK08
RK19
RK18
TK05
TK01
RK11
TK04
RK07
RK10
TK03
RK06
RK09
TK02
RK05
CJ33
DK01
DK02
IK01
RK14
JK01
JK02
RK13
RK04
RK03
RK02
RK01
RK92
JK02

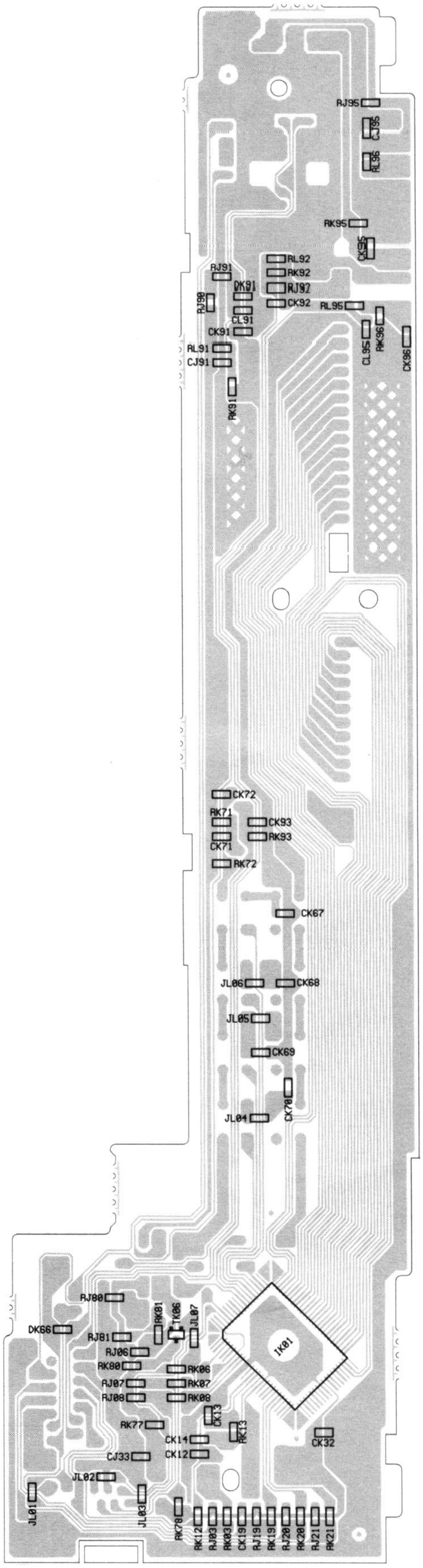
SABA
KDB P
VR 5020
VR 5040

Ferguson
KDB P
FV 80 B

Keyboard with display • Platine de commandes avec afficheur • Bedienteil mit Display
Tastiera con display • Platina mandos con visualizador


CK80
BJ06
JK12
JK13
CK33
JK09
BK14
JK10
JK11
QK01
JK08
RL80
TJ06
GK02
JK05
JK06
JK07
JK04
JK03
LK91
STOP/EJECT
SK01
STANDBY
SK05
F.FWD
SK02
CH+
SK06
PLAY/PAUSE
SK03
CH-
SK07
F.REW
SK04
REC.
SK08
PCB KDB U3 M
20209190.00
GK01
JK02
JK01
PK03
CAMERA PAUSE
JK14
PK01
VIDEO
ZK01
GK04
GK03
PK02
AUDIO
Gnd
Ucc
Uout
BK04
WJ05

Telefunken:
KDB M
M 9415
M 9420
M 9425
M 9430
M 9440
M 9445


RJ95
CJ95
RL96
RK95
CK95
RJ91
RL92
RK92
DK91
RJ92
CK92
RJ90
CL91
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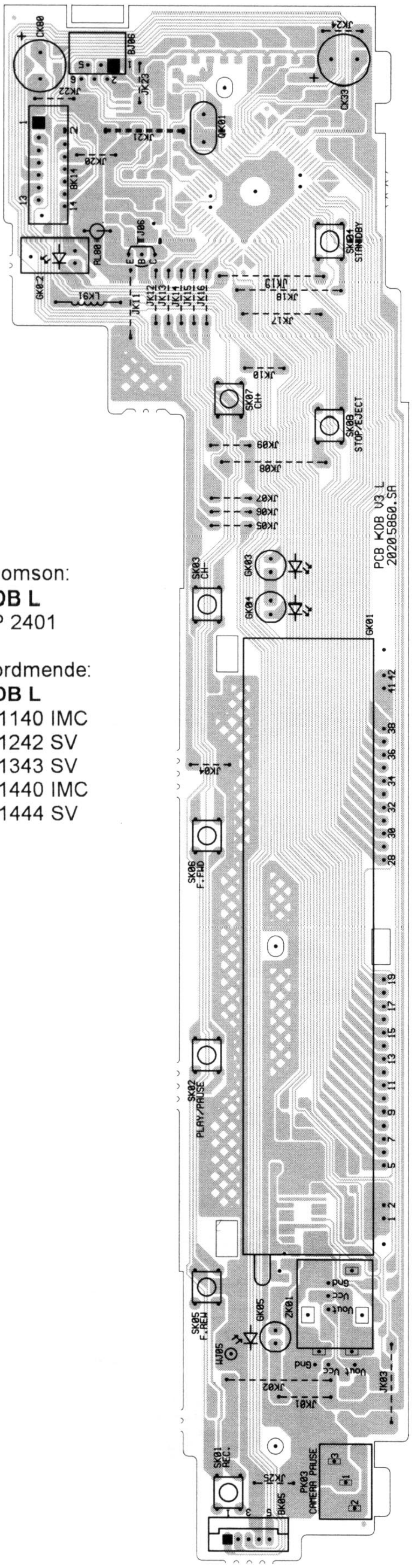
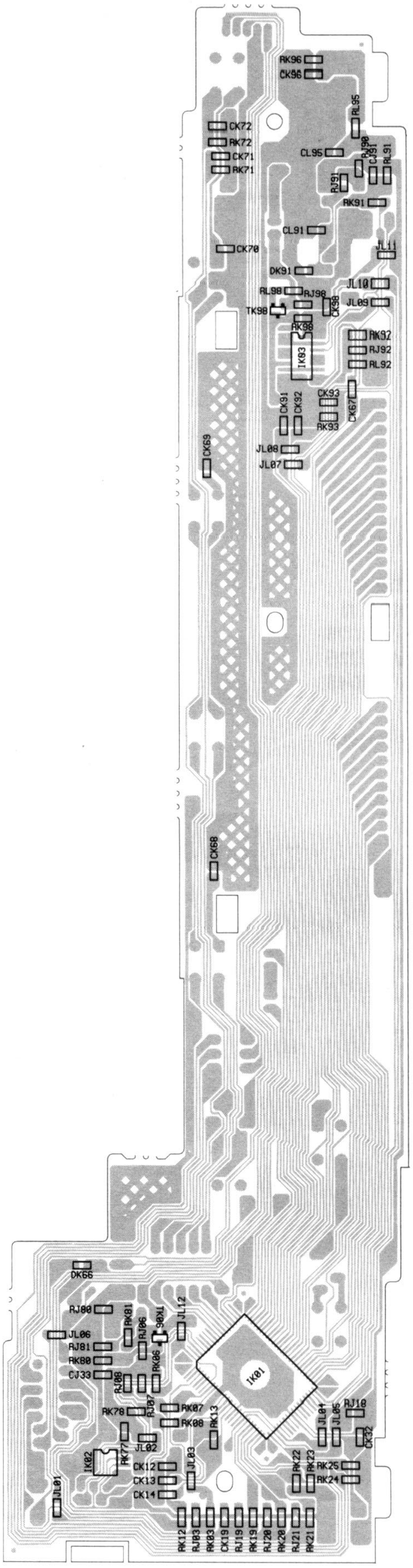
RL91
CJ91
CL95
RK96
CK96
RK91
CK72
RK71
CK93
RK93
CK71
RK72
CK67
JL06
CK68
JL05
CK69
CK70
JL04
RJ80
RK81
TK06
JL07
DK66
RJ81
RJ06
RK80
RK06
RJ07
RK07
RJ08
RK08
CK13
RK77
RK13
TK01
CK14
CJ33
CK12
CK32
JL02
JL01
JL03
RK78
RK12
RJ09
RK09
CK19
RJ19
RK19
RJ20
RK20
RJ21
RK21

Keyboard with display • Platine de commandes avec afficheur • Bedienteil mit Display
Tastiera con display • Platina mandos con visualizador

Thomson:
KDB L
VP 2401

Nordmende:
KDB L
V 1140 IMC
V 1242 SV
V 1343 SV
V 1440 IMC
V 1444 SV


CK80
BJ06
JK22
JK23
JK24
CK33
QK01
BK14
JK20
JK21
RL80
GK02
LK91
JK11
JK12
JK13
JK14
JK15
JK16
JK19
JK18
JK17
SK04 STANDBY
JK10
SK07 CH+
SK08 STOP/EJECT
JK09
JK08
JK07
JK06
JK05
PCB KDB V3 L
20205860.SA
SK03 CH-
GK03
GK04
GK01
JK04
SK06 F.FWD
SK02 PLAY/PAUSE
SK05 F.REW
GK05
ZK01
Gnd
Vcc
Vout
JK03
JK02
JK01
SK01 REC.
JK25
BK05
PK03 CAMERA PAUSE


RK96
CK96
CK72
RK72
CK71
RK71
RL95
CL95
RJ91
RK91
CL91
CK70
DK91
RL98
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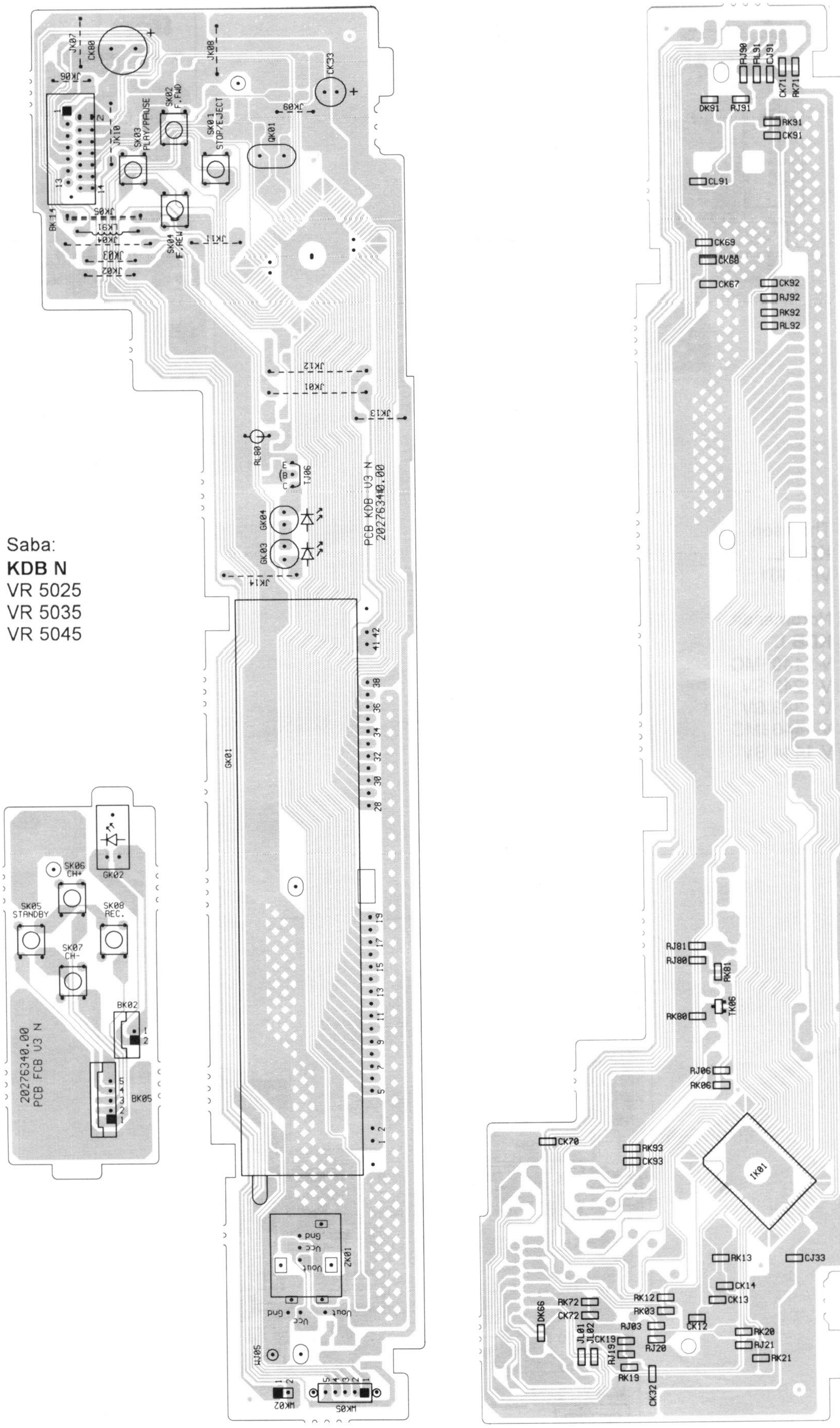
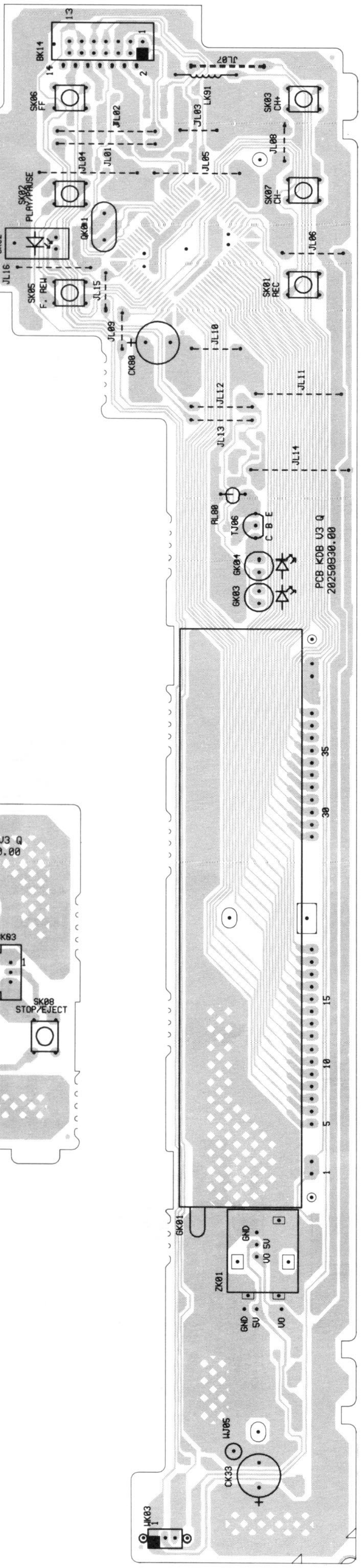
TK98
RK98
JL10
JL09
IK93
RK92
RJ92
RL92
CK91
CK92
CK93
RK93
CK67
JL08
JL07
CK69
CK68
DK66
RJ80
RK81
JL06
RJ81
RJ06
RK80
CJ33
IK01
RK78
RK77
RK07
RK08
RK13
JL02
IK02
CK12
CK13
CK14
JL03
JL01
JL04
JL05
RJ10
CK32
RK22
RK23
RK25
RK24
RK12
RJ03
RK03
CK19
RJ19
RK19
RJ20
RK20
RJ21
RK21

Keyboard with display • Platine de commandes avec afficheur • Bedienteil mit Display
Tastiera con display • Platina mandos con visualizador


JK07
CK80
JK06
JK08
CK33
SK02 F.FWD
SK03 PLAY/PAUSE
SK01 STOP/EJECT
JK09
QK01
JK10
BK14
JK05
LK91
JK04
JK03
JK02
SK04 F.REW
JK11
JK12
JK01
JK13
RL80
TJ06
GK04
GK03
JK14
PCB KDB V3 N
20276340.00
GK01
SK06 CH+
GK02
SK05 STANDBY
SK08 REC.
SK07 CH-
BK02
20276340.00
PCB FCB V3 N
BK05
ZK01
Gnd
Vcc
Vout
WJ05
WK02
WK05
RJ90
RL91
CJ91
CK71
RK71
DK91
RJ91
RK91
CK91
CL91
CK69
CK68
CK67
CK92
RJ92
RK92
RL92
RJ81
RJ80
RK81
TK06
RK80
RJ06
RK06
CK70
RK93
CK93
IK01
RK13
CJ33
CK14
CK13
RK72
CK72
RK12
RK03
CK12
DK66
JL01
JL02
CK19
RJ03
RJ19
RJ20
RK20
RJ21
RK21
RK19
CK32

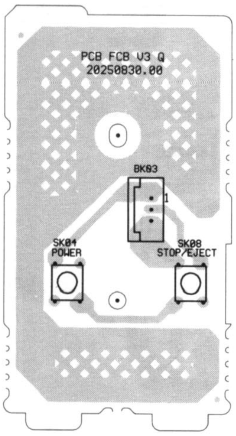
Saba:
KDB N
VR 5025
VR 5035
VR 5045

Keyboard with display • Platine de commandes avec afficheur • Bedienteil mit Display
Tastiera con display • Platina mandos con visualizador

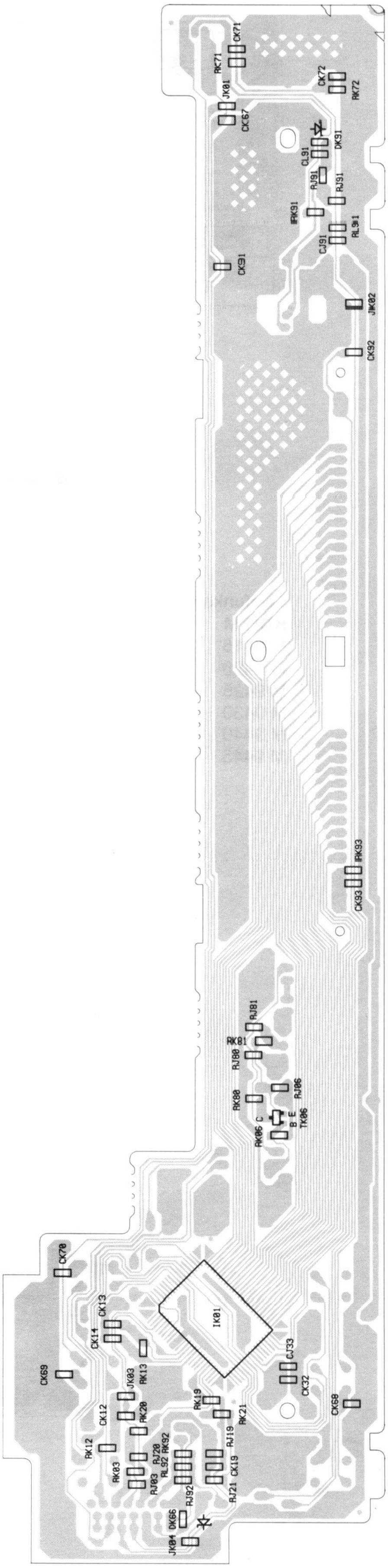


BK14
SK06 FF
SK02 PLAY/PAUSE
GK02
SK05 F. REW
SK03 CH+
SK07 CH-
SK01 REC
QK01
CK08
LK91
JL01
JL02
JL03
JL04
JL05
JL06
JL07
JL08
JL09
JL10
JL11
JL12
JL13
JL14
JL15
JL16
RL08
TJ06
C B E
GK03
GK04
PCB KDB V3 Q
20250830.00
35
30
15
10
5
1
GK01
ZK01
GND
VO
5V
WJ05
CK33
HK03

Ferguson:
KDB Q
FV 81 LV
FV 82 LV

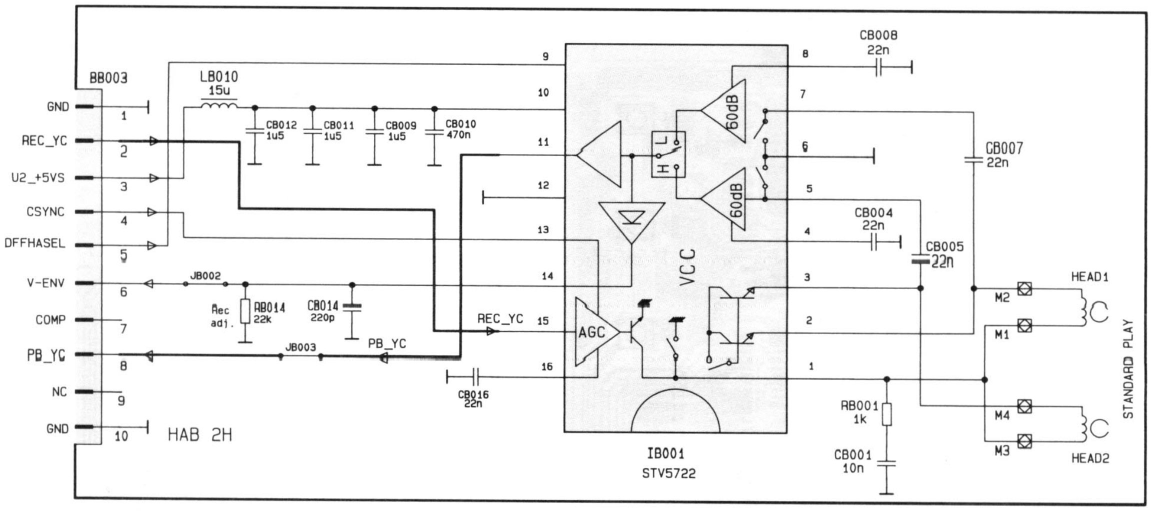


PCB FCB V3 Q
20250830.00
BK03
SK04 POWER
SK08 STOP/EJECT

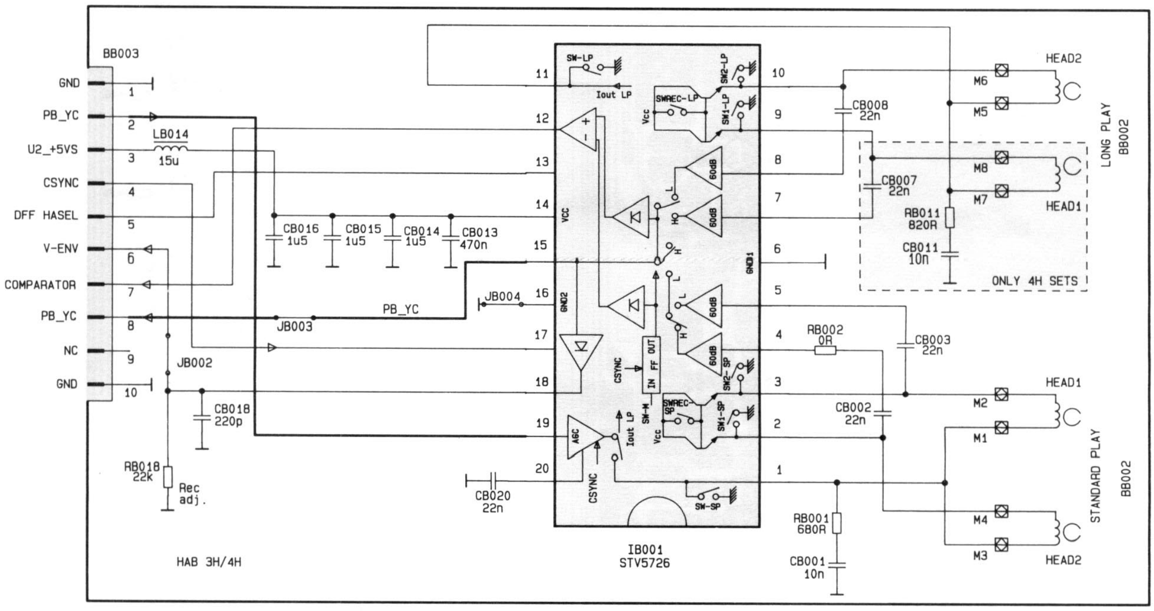


RK71
CK71
JK01
CK67
CK72
RK72
DK91
CL91
RJ91
RJ31
RK91
RL91
CJ91
CK91
JK02
CK92
RK93
CK93
RJ81
RK81
RJ80
RK80
RJ06
RK06
B E C
TK06
CK70
IK01
CK13
CK14
CK69
CJ33
CK32
CK68
JK03
RK13
RK19
RK20
RK21
CK12
RK12
RJ19
RK03
RJ20
RL92
RK92
RJ03
RJ92
CK19
RJ21
JK04
DK66

Head amplifier 2 heads • Préamplificateur vidéo (2 têtes) • Kopfverstärker 2 Köpfe
Preamplificatore 2 testine • Preamplificador 2 cabezas

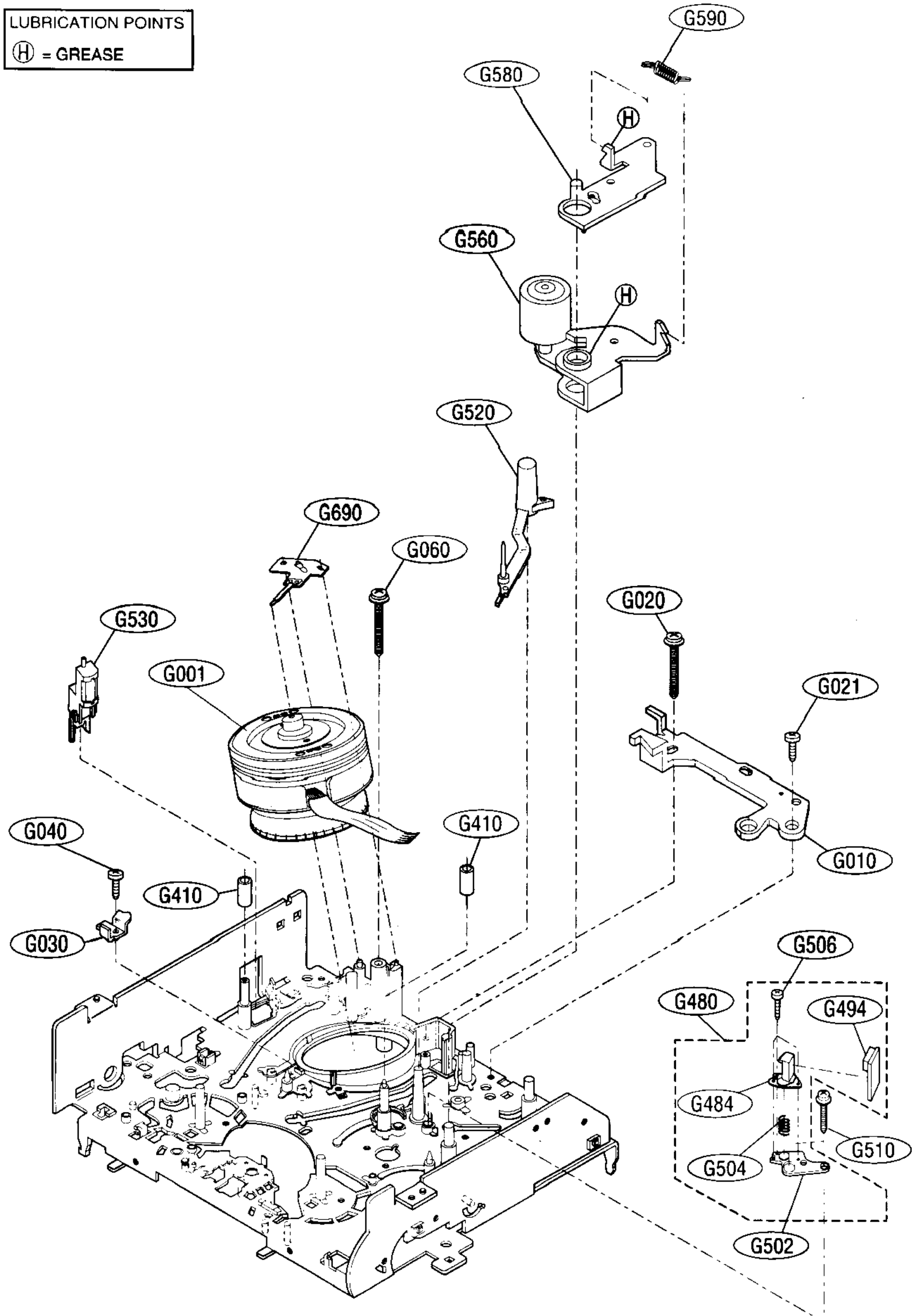

BB003
GND
REC_YC
U2_+5VS
CSYNC
DFFHASEL
V-ENV
COMP
PB_YC
NC
GND
1
2
3
4
5
6
7
8
9
10
HAB 2H
LB010
15u
CB012
1u5
CB011
1u5
CB009
1u5
CB010
470n
JB002
Rec
adj.
RB014
22k
CB014
220p
JB003
PB_YC
REC_YC
CB016
22n
AGC
VCC
60dB
60dB
H
L
IB001
STV5722
CB008
22n
CB007
22n
CB004
22n
CB005
22n
RB001
1k
CB001
10n
HEAD1
HEAD2
M1
M2
M3
M4
STANDARD PLAY

Head amplifier 3 and 4 heads • Préamplificateur vidéo (3 et 4 têtes) • Kopfverstärker 3 und 4 Köpfe
Preamplificatore 3 e 4 testine • Preamplificador 3 o cabezas


BB003
GND
PB_YC
U2_+5VS
CSYNC
DFF HASEL
V-ENV
COMPARATOR
PB_YC
NC
GND
LB014
15u
CB016
1u5
CB015
1u5
CB014
1u5
CB013
470n
JB004
PB_YC
JB003
JB002
CB018
220p
RB018
22k
Rec
adj.
HAB 3H/4H
CB020
22n
SW-LP
Iout LP
SWREC-LP
SW2-LP
SW1-LP
Vcc
60dB
60dB
60dB
60dB
GND1
GND2
CSYNC
IN FF OUT
SW-M
Iout LP
SWREC-SP
SW1-SP
SW2-SP
SW-SP
AGC
IB001
STV5726
CB008
22n
CB007
22n
RB011
820R
CB011
10n
ONLY 4H SETS
RB002
0R
CB003
22n
CB002
22n
RB001
680R
CB001
10n
HEAD2
M6
M5
M8
M7
HEAD1
LONG PLAY
BB002
HEAD1
M2
M1
M4
M3
HEAD2
STANDARD PLAY
BB002

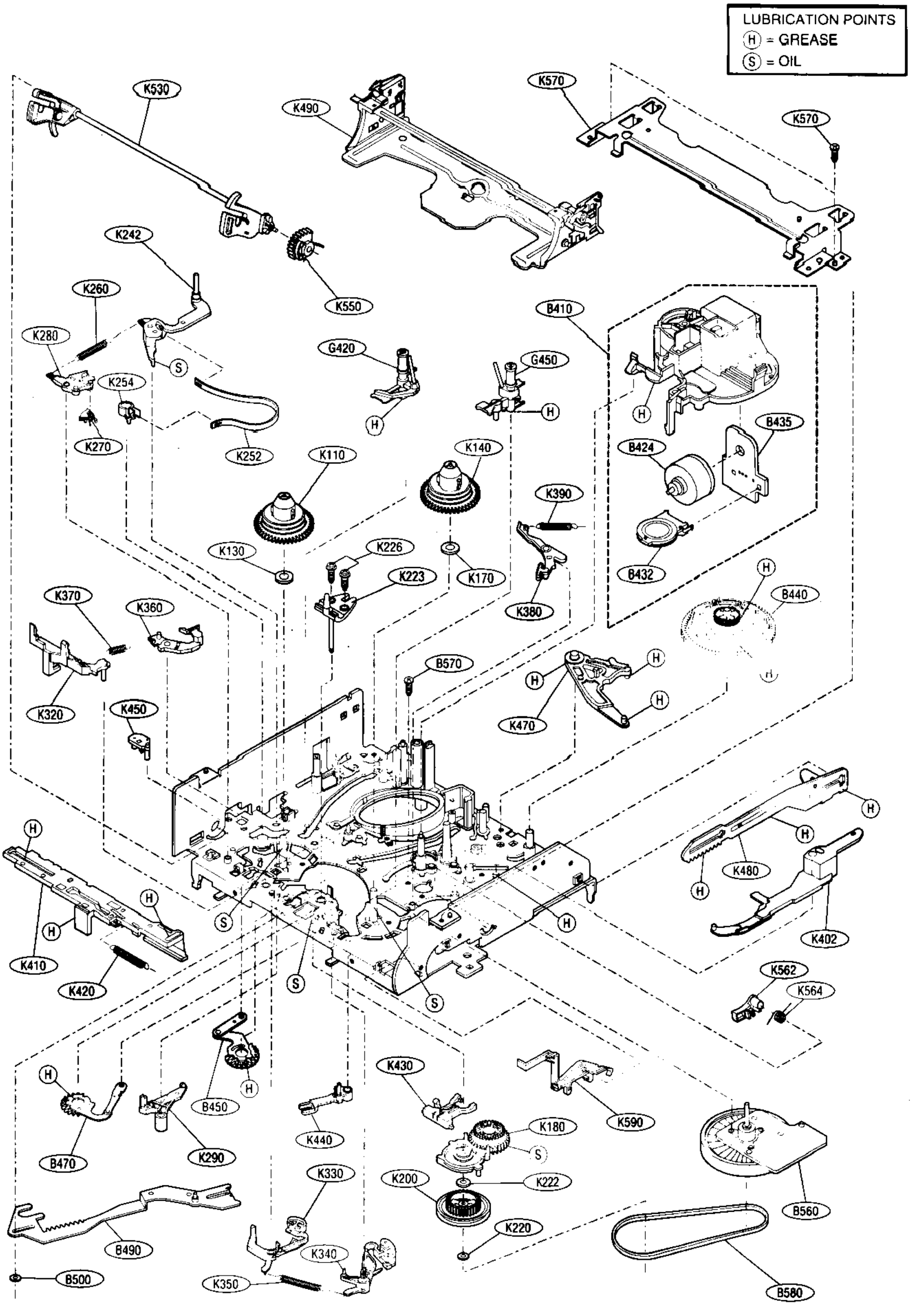
Mechanical Parts
Mechanische Teile

LUBRICATION POINTS
(H) = GREASE



G590
G580
H
G560
H
G520
G690
G060
G020
G530
G001
G021
G410
G040
G010
G410
G030
G506
G480
G494
G484
G510
G504
G502

Mechanical Parts
Mechanische Teile


LUBRICATION POINTS
H = GREASE
S = OIL
K530
K490
K570
K570
K242
K550
K260
K280
K254
S
B410
G420
G450
H
H
H
K270
K252
B435
K110
K140
B424
K390
K130
K226
K223
K170
B432
H
B440
K370
K360
K380
B570
H
H
H
K320
K450
K470
H
H
H
H
K480
H
H
S
S
S
K410
K420
K402
K562
K564
H
H
K430
B450
K590
K180
K440
S
B470
K290
K330
K200
K222
B560
K220
B490
K340
B580
B500
K350

Mechanical Parts
Mechanische Teile

Pos.	Art.-Nr Part No. No.articolo	Bezeichnung	Part	Descrizione
0060	·	LAUFW., MEV3-W4PHC	MECHANISM DECK, ASSY	MECCANISMO, CPL.
B410 / 2	201.871.70	Lademotor R4000, kpl.	Loading drive motor, assy	Motore, cpl.
B424 / 2	201.872.40	Lademotor R4000	Loading motor	Motore
B432 / 2	201.872.90	Kurvenradschalter (SW-LOADING)	Cam sw	Camma
B440 / 2	201.873.30	Nockenzahnrad R4000	Cam gear	Camma ruota dentata
B450 / 2	201.873.20	Zahnrad, S-LOADING, kpl.	Gear	Ruota dentata
B470 / 2	201.874.40	Zahnrad, T-LOADING	Gear	Ruota dentata
B490 / 2	201.875.10	Schieber, LOADING	Slider	Slitta
B560 / 2	202.029.80	Motor, Capstan R4000	Capstan motor	Motore capstan
B580 / 2	201.887.20	Antriebsriemen R4000	Belt	Cinghia
G001 / 1	101.452.50	Kopftrommel S2PS TTN4, kpl. 2 KOPF	Drum assy, 2HD	Tamburo di testa, cpl.
G001 / 1	101.453.20	Kopftrommel S2P LP TTN4, kpl. 2 KOPF - LONG PLAY	Drum assy, 2HD	Tamburo di testa, cpl.
G001 / 1	101.540.40	Kopftrommel W3PS TTN4, kpl. 3 KOPF	Drum assy, 3HD	Tamburo di testa, cpl.
G001 / 1	101.453.40	Kopftrommel W4P TTN4, kpl. 4 KOPF	Drum assy, 4HD	Tamburo di testa, cpl.
G420 / 2	201.865.10	Führungsrollenplatte, Abw.Seite, kpl.	Supply slider asy	Guida nastro, cpl.
G450 / 2	201.866.30	Führungsrollenplatte, Aufw.Seite, kpl.	Take up slider asy	Guida nastro, avvolgere, cpl.
G480 / 1	202.962.80	ACE-Kopf V3 S-COMBAT	Audio/Control head	Testina audio e impulso
G520 / 1	201.867.60	Führungshebel 9	Guide lever	Leva guida
G530 / 1	201.887.40	Voll-Löschkopf R4000	Full erase head	Testina di cancellazione
G560 / 1	201.870.20	Andruckrolle, kpl. R4000	Pinch lever asy	Rullo di pressione, cpl.
G580 / 1	201.871.20	Hebel, PINCH DRIVE, kpl.	Lever asy	Leva, cpl.
G590 / 1	201.871.50	Feder PINCH	Spring	Molla
G680 / (1)	201.888.30	Kopftrommelreiniger, kpl.	Head cleaner asy	Depuratore tamburo di testa, cpl.
G688 / (1)	201.888.70	Kopfreiniger	Head cleaner	Base pulire tamburo di testa
G690 / 1	101.626.00	Massebürste, kpl. R4000	Ground brush asy	Spazzole a lamine, cpl.
K110 / 2	201.861.10	Bandteller, Abw.Seite	Supply reel	Portabobina di svolgimento
K140 / 2	201.862.20	Bandteller, Aufw.Seite, kpl.	Take up reel asy	Portabobina avvolgimento, cpl.
K180 / 2	201.862.80	Schwenkkupplungsrolle, kpl.	Idler asy	Puleggia, cpl.
K200 / 2	201.864.60	Riemenscheibe CENTER	Gear pulley	Puleggia
K242 / 2	201.868.10	Bandzugsfühlhebel, kpl. R4000	Tension lever asy	Leva di tensione, cpl.
K252 / 2	201.868.40	Spannband (R4000) kpl.	Brake band asy	Staffa di tensione, cpl.
K254 / 2	201.868.60	Halter, Bremsband R4000	Holder	Supporto
K260 / 2	201.868.80	Feder (TENSION LEVER)	Spring	Molla
K270 / 2	201.869.10	Verriegelungshebel (TENSION LEVER)	Hook	Leva arresto
K280 / 2	201.869.20	Hebel (HOOK)	Lever	Leva
K290 / 2	201.869.30	Hebel (TENSION DRIVE)	Lever	Leva
K320 / 2	201.875.80	Hebel (REC-INH)	Lever	Leva
K330 / 2	201.877.10	Hauptbremse, abwickeln	Main brake, supply	Freno principale, svolgere
K340 / 2	201.877.30	Hauptbremse, aufwickeln	Main brake, take up	Freno principale, avvolgere
K350 / 2	201.877.40	Feder	Spring	Molla
K360 / 2	201.876.20	Bremshebel, SU SOFT BRAKE	Brake lever	Leva di freno
K370 / 2	201.877.60	Feder	Spring	Molla
K380 / 2	201.877.70	Bremshebel, TU Softbrake	Lever soft brake	Leva di freno
K390 / 2	201.879.10	Feder	Spring	Molla
K402 / 2	201.876.40	Hebel (DRIVE)	Lever	Leva
K410 / 2	201.879.20	Schieber, CAM	Slider cam	Slitta
K420 / 2	201.879.30	Feder	Spring	Molla
K430 / 2	201.876.50	Hebel (IDLE-UP DOWN)	Lever	Leva
K440 / 2	201.876.60	Hebel (IDLE KICK)	Lever	Leva
K450 / 2	201.879.40	Hebel (IDLE CENTERING)	Lever	Leva
K470 / 2	201.881.90	Hebel (CAM)	Lever	Leva
K480 / 2	201.880.80	Schieber (FL DRIVE)	Slider	Slitta
K490 / 2	201.880.90	Cassettenhalter	Cassette holder	Portacassette
K530 / 2	201.875.40	Antriebachse kpl.	Drive arm asy	Spinotto comandi cpl.
K550 / 2	201.885.20	Zahnrad (LEVER DRIVE)	Gear	Ruota dentata
K562 / 2	201.885.30	Hebel (ARM BRAKE)	Lever	Leva
K564 / 2	201.885.40	Drehfeder	Torsion spring	Molla spirale piana
K570 / 2	201.885.50	Cassettenhalter TOP	Bracket	Supporto
K590 / 2	201.887.50	Hebel (DOOR OPEN)	Lever	Leva

Spare Parts
Ersatzteile

Pos.	Art.-Nr Part No. No.articolo	Bezeichnung	Part	Descrizione
		BAUGRUPPEN (KEIN AUSTAUSCH):	**MODULES:**	**GRUPPO:**
0010M	201.829.60	FE4201, TUNER (HF-MODULATOR)	FE4201, TUNER	FE4201, SINTONIZZATORE
0020M	201.898.10	IF 4101, ZF-EINHEIT	IF 4101, UNIT IF	IF 4101, UNITA FI
0032M	203.414.50	SECAM DETECTOR V3A2 LTP.	SECAM DETECTOR V3A2 P.C.B.	SECAM DETECTOR V3A2 PIASTRA
0040M	203.149.50	PBEQ V3E1 LTP.	PBEQ V3E1 P.C.B.	PBEQ V3E1 PIASTRA
0041M	203.149.00	CHR DLY V3G1 LTP.	CHR DLY V3G1 P.C.B.	CHR DLY V3G1 PIASTRA
0042M	203.149.60	OSD-MIX V3F1 LTP.	OSD-MIX V3F1 P.C.B.	OSD-MIX V3F1 PIASTRA
0043M	203.149.10	CCD AMP V3J1 LTP.	CCD AMP V3J1 P.C.B.	CCD AMP V3J1 PIASTRA
		ELEKTRISCHE TEILE:	**ELECTRICAL PARTS:**	**PARTI ELETTRICO:**
MAIN		**MB V3A . . LTP. MAIN**	**MB V3A . . P.C.B. MAIN**	**MB V3A . . PIASTRA MAIN**
BS031A	101.207.90	Folienkabel 7x1,25mm 150mm wh	FFC-Jumper 7-pole	Cavo, 7poli
BT001A	101.612.60	Folienkabel 14x1,25mm 150mm wh	FFC-Jumper 14-pole	Cavo, 14poli
BT005A	101.674.20	Folienkabel 6x1,25mm 124mm wh	FFC-Jumper 6-pole	Cavo, 6poli
BV100	102.517.10	Folienkabel 6x1,25mm 150mm wh	FFC-Jumper 6-pole	Cavo, 6poli
CT118	490.008.0376 S	0F1 5,5V Elko (MEMORY)	0F1 5,5V E Cap	0F1 5,5V Condens. elettrolit.
CV053	202.765.50	10UF 35V 20% Elko bipolar	10UF 35V 20% E cap bi-polar	10UF 35V 20% CE
DT101	339.527.177	LL4148 SMD Diode	LL4148 SMD Diode	LL4148 SMD Diodo
DT102-104	339.525.013	1N4001 Diode	1N4001 Diode	1N4001 Diodo
DT107,108	339.525.013	1N4001 Diode	1N4001 Diode	1N4001 Diodo
DT200	242.069	ZMM4,7 SMD ZENER Diode	ZMM4,7 SMD ZENER Diode	ZMM4,7 SMD ZENER Diodo
DT201	490.007.9849	Diode, LL4448, CHIP	Diode, LL4448	Diodo, LL4448
DT202,203	339.525.013	1N4001 Diode	1N4001 Diode	1N4001 Diodo
DT204,205	309.325.927	1N4148, Diode	1N4148, Diode	1N4148, Diodo
DV038,039	339.527.177	LL4148 SMD Diode	LL4148 SMD Diode	LL4148 SMD Diodo
DV132	339.527.177	LL4148 SMD Diode	LL4148 SMD Diode	LL4148 SMD Diodo
DV136	490.007.9849	Diode, LL4448, CHIP	Diode, LL4448	Diodo, LL4448
DW001	309.325.195	ZPD12 2% ZENER Diode	ZPD12 2% ZENER Diode	ZPD12 2% ZENER Diodo
DW002,006	490.007.9849	Diode, LL4448, CHIP	Diode, LL4448	Diodo, LL4448
DW005	704.467.40	ZMM5,1, 2%, Diode, SMD ZENER	ZMM5,1, 2%, Diode ZENER	ZMM5,1, 2%, Diodo ZENER
DW007,008	339.525.013	1N4001 Diode	1N4001 Diode	1N4001 Diodo
DZ001	704.467.40	ZMM5,1, 2%, Diode, SMD ZENER	ZMM5,1, 2%, Diode ZENER	ZMM5,1, 2%, Diodo ZENER
FZ050	309.160.851	TPW04B Keramikfilter 5,74Mhz	TPW04B Ceramic filter	TPW04B Filtro ceramico
GT100	252.727	GL451V DIODE INFRA	GL451V, Diode INFRA	GL451V, Diodo INFRA
GT100A	202.017.80	Halter LED, R4000	LED holder	Supporto LED
GT101,102	101.376.70	GP1S562 PHOTO COUPLER	GP1S562	GP1S562
GT103,104	252.729	Transistor, NM5 PT493F PHOTO	Transistor, NM5 PT493F PHOTO	Transistore, NM5 PT493F PHOTO
GT103A	201.954.50	Halter (START-SENSOR) R4000	Holder	Supporto
GT104A	201.954.40	Halter (END-SENSOR) R4000	Holder	Supporto
GT105	202.151.60	HW-300B (F+1/2E) Hall Sensor	HW-300B Hall Sensor	HW-300B Hall Palpatore
GT105A	201.954.30	Halter (HALL SENSOR)	Holder	Supporto
IS001	101.220.10	BA7795LS IC	BA7795LS IC	BA7795LS CI

Spare Parts
Ersatzteile

Pos.	Art.-Nr Part No. No.articolo	Bezeichnung	Part	Descrizione
IT001	203.440.20	TMP90CR74 B2_1, IC, **FLAT**	TMP90CR74 B2_1, IC	**TMP90CR74 B2_1, CI**
NM		V1242SV/V1444SV/...		
SABA		VR5035/VR5045/...		
TFR		**M9420/M9430/M9445/...**		
IT001	203.381.30	TMP90CR74-B1G, IC, **FLAT**	**TMP90CR74-B1G IC**	**TMP90CR74-B1G IC**
NM		V..../...		
SABA		VR5020/VR5040/...		
TFR		M..../...		
IT002	202.647.60	TA7291S IC	TA7291S IC	TA7291S CI
IT003	203.168.70	ST24C08/CB1 IC	ST24C08/CB1 IC	ST24C08/CB1 **CI**
IT004	**202.504.10**	PST7032MT IC	PST7032MT IC	PST7032MT CI
IT005	202.577.60	TB6515AP IC	TB6515AP **IC**	TB6515AP CI
IV001	201.952.30	TA8892AN-C IC	TA8892AN-C **IC**	TA8892AN-C CI
IV070	201.933.20	TL8844P IC	TL8844P IC	TL8844P CI
IV100	201.933.30	TL8843P IC	TL8843P IC	TL8843P CI
LS030	**242.864**	**Oszillator Spule, Bias 2213**	**Bias oscillator coil**	**Bobina oscillatore, Bias**
LT103,106	339.349.709	3U3H 10% Drossel	3U3H 10% Choke coil	3U3H 10% Bobina di arresto
LT105	339.349.905	HF-Drossel, 33µH	RF choke coil, 33µH	Bobina di arresto, 33µH
LV012	339.349.905	HF-Drossel, 33µH	RF choke coil, 33µH	Bobina di arresto, 33µH
LV028	**339.349.061**	**Spule, 33µH**	**Coil, 33µH**	**Bobina, 33µH**
MT001	**101.505.60**	**Statorkern TTN4**	**Stator core TTN4**	**Stator core TTN4**
PS034	339.509.700	Potentiometer, 100kΩ	Potentiometer, 100kΩ	Potenziometro, 100kΩ
PT101	339.590.256	Trimmer, 4,2-20pF	Trimmer, 4,2-20pF	Condensatore regol., 4,2-20pF
QT100	339.344.722	32K768HZ QUARZ	**Crystal, 32,768kHz**	**Quarzo, 32,768kHz**
QT101	203.149.90	16M0 Hz Quarz	16M0 Hz Crystal	16M0 Hz Quarzo
QT102	339.344.909	Quarz, 17,734475MHz	Crystal, 17,734475MHz	Quarzo, 17,734475MHz
QV018	202.637.20	4M433619 Hz Quarz	4M433619 Hz Crystal	4M433619 Hz Quarzo
RS041	309.533.636 S	**18R 0,3W 5% Sicherheitswiderstand**	**18R 0,3W 5% Fusible resistor**	**18R 0,3W 5% Resistenza fusibile**
RT135	339.537.717 S	1R 0,3W 5% Sicherheitswiderstand	1R 0,3W 5% Fusible resistor	1R 0,3W 5% Resistenza fusibile
RV027	339.527.022	Diode, 1N4448	Diode, 1N4448	Diodo, 1N4448
ST002	**101.376.10**	**Druckschalter SPPB62**	**Push switch**	**Commutatore**
TC112	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TS030	249.063	BC847B SMD Transistor	BC847B SMD Transistor	BC847B SMD Transistore
TS039	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TS040	**238.025**	**RN1404, Transistor, SSD**	RN1404, Transistor	RN1404, Transistore
TT100	**339.555.241**	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TT101,104	242.014	Transistor, BC848/C, CHIP	Transistor, BC848/C	Transistore, BC848/C
TT102	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TT103	490.006.3136	FMW1 Transistor, SMD	FMW1 Transistor	FMW1 Transistore
TT106,107	238.025	RN1404, Transistor, SSD	RN1404, Transistor	RN1404, Transistore
TT109	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
TT110	352.875.5000	BC857B SMD Transistor	BC857B SMD Transistor	BC857B SMD Transistore
TT111	242.866	2SA1020Y Transistor	2SA1020Y Transistor	2SA1020Y Transistore
TT200	**339.556.787**	BC337-40 Transistor	BC337-40 Transistor	BC337-40 Transistore
TV022,029	**339.555.241**	**BC848B SMD-TRANS**	**BC848B SMD Transistor**	BC848B SMD Transistore
TV035-039	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
TV040	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TV041	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
TV044	101.490.30	BC848/A, Transistor SMD	BC848/A, Transistor	BC848/A, Transistore

Spare Parts
Ersatzteile

Pos.	Art.-Nr Part No. No.articolo	Bezeichnung	Part	Descrizione
TV045,046	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
TV047,052	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TV105	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TV107	101.490.30	BC848/A, Transistor SMD	BC848/A, Transistor	BC848/A, Transistore
TV111,112	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TV130	242.014	Transistor, BC848/C, CHIP	Transistor, BC848/C	Transistore, BC848/C
TV131	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TV137	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
TV160	204.191.00	RN2204TPE4, Transistor	RN2204TPE4, Transistor	RN2204TPE4, Transistore
TV161	905.251.00	RN1204-TPE4, Transistor	RN1204-TPE4, Transistor	RN1204-TPE4, Transistore
TW001	242.014	Transistor, BC848/C, CHIP	Transistor, BC848/C	Transistore, BC848/C
TW002	508.354.00	RN2403, Transistor, SSD	RN2403, Transistor	RN2403, Transistore
TW003,005	603.908.00	2SC2236-Y Transistor	2SC2236-Y Transistor	2SC2236-Y Transistore
TW006	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TW008	403.834.00	RN1405, Transistor, SSD	RN1405, Transistor	RN1405, Transistore
TZ031,050	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TZ032,057	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TZ051	242.012	BC858C SMD Transistor	BC858C SMD Transistor	BC858C SMD Transistore
TZ055,056	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
0010M		**FE4201, TUNER (HF-MODULATOR)**	**FE4201, TUNER**	**FE4201, SINTONIZZATORE**
TUNER	201.829.60	FE4201, TUNER (HF-MODULATOR)	FE4201, TUNER	FE4201, SINTONIZZATORE
0020M		**IF 4101, ZF-EINHEIT**	**IF 4101, UNIT IF**	**IF 4101, UNITA FI**
ZF	201.898.10	IF 4101, ZF-EINHEIT	IF 4101, UNIT IF	IF 4101, UNITA FI
FI11	203.009.50	40M4 HZ Filter LA7x7	40M4 HZ Filter	40M4 HZ Filtro
FI20	309.103.986	36MHZ-FILTER	Filter	Filtro
FI44	490.007.8983	FILTER 5,5MHZ	LA 7X7, 5ME5HZ	
II20	201.821.30	LA7577, IC	LA7577, IC	LA7577, CI
PI20	309.509.173	Potentiometer, 10kΩ, 0,033W, 30%, H	Potentiometer, 10kΩ, 30%, H	Potenziometro, 10kΩ, 30%, H
QI11	200.730.50	SFSH5.5MCB Keramikfilter	SFSH5.5MCB Ceramic filter	SFSH5.5MCB Filtro ceramico
QI20	200.131.80	G1960M Oberflächenwellenfilter	G1960M Surface acoustic wave filter	G1960M Filtro a onde superficiali
TI10	242.857	MMBTH10LT1 Transistor, SMD	MMBTH10LT1 Transistor	MMBTH10LT1 Transistore
0030M		**TMB V3A1 LTP. TERMINAL BOARD**	**TMB V3A1 P.C.B.**	**TMB V3A1 PIASTRA**
BX005	339.540.938	Buchse Euro AV (SCART), BK2093	Scart socket	Presa peritelevision
BX006	102.517.20	Buchse Euro AV (SCART), BU2093	Scart socket	Presa peritelevision
DG020,034	309.325.927	1N4148, Diode	1N4148, Diode	1N4148, Diodo
IX001	101.066.70	STV6400, IC	STV6400, IC	STV6400, CI
IX020	309.368.217	MC14052BCP IC	MC14052BCP IC	MC14052BCP CI
IX040	411.714	MC14053B/HEF4053B/TC4053B/BU4053B IC	MC14053B/HEF4053B/BU4053B IC	MC14053B/HEF4053B/TC4053B CI
IY001	101.443.10	SDA5648, IC	SDA5648, IC	SDA5648, CI
TG030	905.251.00	RN1204-TPE4, Transistor	RN1204-TPE4, Transistor	RN1204-TPE4, Transistore
TG031	309.001.226	BC558B, Transistor	BC558B, Transistor	BC558B, Transistore
TX002	309.001.293	BC548B, Transistor	BC548B, Transistor	BC548B, Transistore
TX050,070	309.001.325	BC547C Transistor	BC547C Transistor	BC547C Transistore
TX213	309.001.325	BC547C Transistor	BC547C Transistor	BC547C Transistore

Spare Parts
Ersatzteile

Pos.	Art.-Nr Part No. No.articolo	Bezeichnung	Part	Descrizione
0032M		**SECAM DETECTOR V3A2 LTP.**	**SECAM DETECTOR V3A2 P.C.B.**	**SECAM DETECTOR V3A2 PIASTRA**
SEC-DET	203.414.50	SECAM DETECTOR V3A2 LTP.	SECAM DETECTOR V3A2 P.C.B.	SECAM DETECTOR V3A2 PIASTRA
ID361	508.992.40	BA7025L, IC	BA7025L, IC	BA7025L, CI
LD361	202.751.90	7K8 HZ Filter, 20MIOH	7K8 HZ Filter	7K8 HZ Filtro
QD362,363	309.001.293	BC548B, Transistor	BC548B, Transistor	BC548B, Transistore
QD364	704.219.50	TRBR RN1202 Transistor FET	TRBR RN1202 Transistor	TRBR RN1202 Transistore
ZD361	203.155.50	4M5 HZ Keramikfilter	4M5 HZ Ceramic filter	4M5 HZ Filtro ceramico
0040M		**PBEQ V3E1 LTP.**	**PBEQ V3E1 P.C.B.**	**PBEQ V3E1 PIASTRA**
PBEQ	203.149.50	PBEQ V3E1 LTP.	PBEQ V3E1 P.C.B.	PBEQ V3E1 PIASTRA
TV005	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
TV006,007	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TV008	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TV010	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TV121	242.014	Transistor, BC848/C, CHIP	Transistor, BC848/C	Transistore, BC848/C
TV122	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
TV123	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
0041M		**CHR DLY V3G1 LTP.**	**CHR DLY V3G1 P.C.B.**	**CHR DLY V3G1 PIASTRA**
CHR-DLY	203.149.00	CHR DLY V3G1 LTP.	CHR DLY V3G1 P.C.B.	CHR DLY V3G1 PIASTRA
TV002	109.662.00	RN1402, Transistor, SSD	RN1402, Transistor	RN1402, Transistore
TV060	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TV061	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
0042M		**OSD-MIX V3F1 LTP.**	**OSD-MIX V3F1 P.C.B.**	**OSD-MIX V3F1 PIASTRA**
OSD	203.149.60	OSD-MIX V3F1 LTP.	OSD-MIX V3F1 P.C.B.	OSD-MIX V3F1 PIASTRA
TV125	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TV140,141	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TV142,143	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
TV144	270TX2446	BC858B SMD Transistor	BC858B SMD Transistor	BC858B SMD Transistore
TV145	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
0043M		**CCD AMP V3J1 LTP.**	**CCD AMP V3J1 P.C.B.**	**CCD AMP V3J1 PIASTRA**
CCD	203.149.10	CCD AMP V3J1 LTP.	CCD AMP V3J1 P.C.B.	CCD AMP V3J1 PIASTRA
TV092,093	339.555.241	BC848B SMD-TRANS	BC848B SMD Transistor	BC848B SMD Transistore
0070		**SMPS V3A1 LTP., NETZTEIL**	**SMPS V3A1 P.C.B., POWER**	**SMPS V3A1 P.DI RETE**
BP001	242.023 S	Buchse, Netzanschluß	AC-socket	Boccolo rete
CP001	252.320 S	0U1F 275V 20% MP-Kondensator	0U1F 275V 20% MPoly cap	0U1F 275V 20% C PM
CP002	242.084 S	47UF 385V 20% ELKO %	E Cap, 47µF, 385V	Condens. elettrol., 47µF, 385V
CP003	243.843 S	Keramik-Kondensator, 2,2nF, 400V, 20%	C cap, 2,2nF, 400V	Condens. ceramico, 2,2nF, 400V
CP004	242.947	Keramik-Kondensator, 100pF, 1kV	C cap, 100pF, 1kV	Condens. ceramico, 100pF, 1kV
CP008	309.413.520	100UF ELKO 25V	100UF 25V E Cap	100UF 25V Condens. elettrolit.
CP055,073	339.590.218 S	470P KERAMIKKO 400V	C cap, 470pF, 400V	Condens. ceramico, 470pF, 400V
CP082	207TX1317	Elko, 1000µF, 16V	E cap, 1000µF, 16V	Condens. elettrolit., 1000µF, 16V

Spare Parts
Ersatzteile

Pos.	Art.-Nr Part No. No.articolo	Bezeichnung	Part	Descrizione
DP001-004	309.327.074	1N4007, Diode	1N4007, Diode	1N4007, Diodo
DP005	309.325.112	BA158 Diode	BA158 Diode	BA158 Diodo
DP007	309.325.056	BA157 Diode SSW	BA157 Diode	BA157 Diodo
DP008,009	309.325.927	1N4148, Diode	1N4148, Diode	1N4148, Diodo
DP041	309.325.056	BA157 Diode SSW	BA157 Diode	BA157 Diodo
DP051,052	464.527	BAV20 Diode	BAV20 Diode	BAV20 Diodo
DP061	309.325.056	BA157 Diode SSW	BA157 Diode	BA157 Diodo
DP071	464.527	BAV20 Diode	BAV20 Diode	BAV20 Diodo
DP080	309.325.166	Diode, 1N5822	Diode, 1N5822	Diodo, 1N5822
DP090	201.501.90	FUF5404, Diode	FUF5404, Diode	FUF5404, Diodo
DP093	309.325.927	1N4148, Diode	1N4148, Diode	1N4148, Diodo
DP094	256.299	ZPD5,6 0,5W 2% ZENER Diode	ZPD5,6 0,5W 2% ZENER Diode	ZPD5,6 0,5W 2% ZENER Diodo
DP095	339.527.021	MUR115/BYW100-150 Diode	MUR115/BYW100-150 Diode	MUR115/BYW100-150 Diodo
FP001	339.570.320 S	1AT Sicherung	Glass fuse, 1AT, 250V	Fusibile vetro, 1AT, 250V
IP001	100.690.20	U4614B, IC	U4614B, IC	U4614B, CI
IP002	201.739.40	LM393N, IC	LM393N, IC	LM393N, CI
LP001	204.785.80 S	TF-Mains Filter, 47MI0H	Filter choke	Bobina di filtraggio
LP002	202.475.60 S	TF-Mains Filter, 33MI0H	Filter choke	Bobina di filtraggio
LP020	101.645.90 S	Trafo, Schaltnetzteil	Switched mode power transformer	Trasformatore elettronico
LP051	261.823	HF-Drossel, 330µH	RF choke coil, 330µH	Bobina di arresto, 330µH
LP071	339.349.067	Spule, 33µH	Coil, 33µH	Bobina, 33µH
LP081	490.008.0354	6U8H SPULE	Choke, 6,8µH	Bobina di arresto, 6,8µH
RP018	490.007.4163 S	1R5 0,3W 5% Sicherheitswiderstand	1R5 0,3W 5% Fusible resistor	1R5 0,3W 5% Resistenza fusibile
RP021	413.195.09 S	2K2 5% 0,3W, Sicherheitswid.	2K2 5% 0,3W, Fusible resistor	2K2 5% 0,3W, Resistenza fusibile
RP041	242.019 S	0R1 0,4W 10% Sicherheitswiderstand	0R1 0,4W 10% Fusible resistor	0R1 0,4W 10% Resistenza fusibile
RP042	339.537.716 S	10R 0,3W 5% Sicherheitswiderstand	10R 0,3W 5% Fusible resistor	10R 0,3W 5% Resistenza fusibile
RP051	339.537.733 S	39R 0,3W 5%, Sicherheitswiderstand	39R 0,3W 5%, Fusible resistor	39R 0,3W 5%, Resistenza fusibile
RP071	252.488 S	47R 0,3W Sichwid.	47R 0,3W Fusible resistor	47R 0,3W Resistenza fusibile
RP091	242.019 S	0R1 0,4W 10% Sicherheitswiderstand	0R1 0,4W 10% Fusible resistor	0R1 0,4W 10% Resistenza fusibile
RP092	490.008.0402 S	120R 0,3W 5% Sichwid.	Fusible resistor, 120Ω, 0,3W	Resistenza fusibile, 120Ω, 0,3W
TP001	102.067.60	BUL310XI Transistor	BUL310XI Transistor	BUL310XI Transistore
TP091	242.866	2SA1020Y Transistor	2SA1020Y Transistor	2SA1020Y Transistore
0210		KDB V3 . . LTP., TIMER/DISPLAY	KDB V3 . . P.C.B., TIMER/DISPLAY	KDB V3 . . PIAST. TIMER/DISPLAY
DK66	242.069	ZMM4,7 SMD ZENER Diode	ZMM4,7 SMD ZENER Diode	ZMM4,7 SMD ZENER Diodo
GK01	200.812.40 S	Fluoreszenzanzeige/Display 11-MT-83GK	Fluorescent display panel	Indicatore / display
GK02-04	202.686.00	TSIP5201, Diode INFRA	TSIP5201, Diode INFRA	TSIP5201, Diodo INFRA
IK01 NM	203.440.30	TMP87CP71F L1-1(3.1), IC, FLAT V1242SV/1444SV/...	TMP87CP71F L1-1(3.1), IC	TMP87CP71F L1-1(3.1), CI
IK01 SABA	203.380.60	TMP87CP71F-N1, IC, FLAT VR5035/VR5045/...	TMP87CP71F-N1, IC	TMP87CP71F-N1, CI
IK01 TFR	203.373.90	TMP87CP71F-M1, IC, FLAT M9420/M9430/M9445/...	TMP87CP71F-M1, IC	TMP87CP71F-M1, CI
PK01,02	202.043.10	Cinch Buchse, JPJ2022	Cinch socket	Boccola cinch
PK03	339.542.058	Buchse, Kopfhörer, 3,6mm	Headphone socket	Boccola cuffia
QK01	309.335.711	8MHz Quarz	8MHz Resonator	8MHz Risonatore
SK01-08	309.099.38	Taktschalter	Tact switch	Interruttore

THOMSON CONSUMER ELECTRONICS

NORDMENDE
THOMSON TECHNOLOGY

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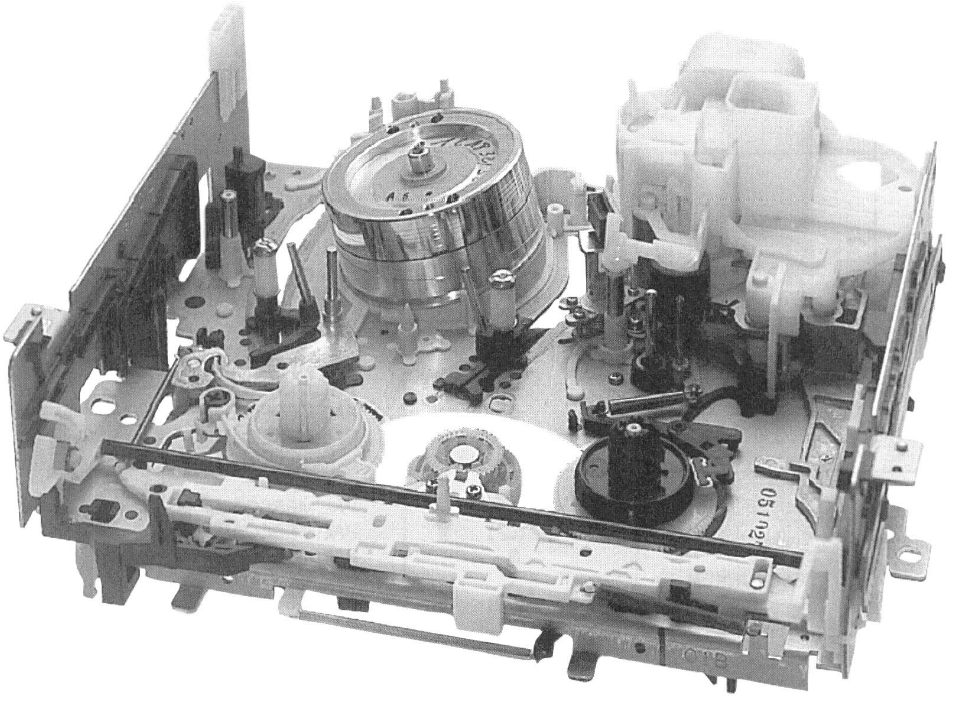
R4000

Mechanical adjustment - Disassembly/Assembly
Instruction de réglages mécaniques - Démontage/Remontage
Mechanische Einstellungen - Demontage/Montage
Istruzioni per la manutenzione meccanica - Smontaggio/Rimontaggio
Ajustes mecanicos - Desmontar/Volver a montar



WARNING : *Before servicing this chassis read the safety recommendations.*
ATTENTION : *Avant toute intervention sur ce châssis, lire les recommandations de sécurité.*
ACHTUNG : *Vor jedem Eingriff auf diesem Chassis, die Sicherheitsvorschriften lesen.*
ATTENZIONE : *Prima di intervenire sullo chassis, leggere le norme di sicurezza.*
IMPORTANTE : *Antes de cualquier intervención, leer las recomendaciones de seguridad.*

Code : 102.859.90 - 1094

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Deutschland

MODELLE	*MARKE*	*KOEPFE*	*TYPE*	*KATEGORIE*
V 1140 IMC	NORDMENDE	2	PAL(MESECAM)	1
V 1242 SV		2 (LP)	PAL(MESECAM)	1
V 1440 IMC		4 (LP)	PAL(MESECAM)	1
V 1444 SV		4 (LP)	PAL(MESECAM)	1
V 3445 SV		4 + 2 (LP)	PAL(MESECAM)	2
V 4404 SENSAR		4 + 2 (LP)	PAL / NTSC	2
V 4445 SV		4 + 2 + 1 (LP)	PAL / NTSC	2
VR 5020	SABA	2	PAL(MESECAM)	1
VR 5021		2		1
VR 5025		2		1
VR 5035		3		1
VR 5040		4		1
VR 5045		4		1
M 9415	TELEFUNKEN	2	PAL(MESECAM)	1
M 9420		2	PAL(MESECAM)	1
M 9423		2	PAL(MESECAM)	1
M 9425		2 (LP)	PAL(MESECAM)	1
M 9430		3	PAL(MESECAM)	1
M 9443		4	PAL(MESECAM)/SECAM	1
M 9445		4 (LP)	PAL(MESECAM)	1
M 9460		4 + 2 (LP)	PAL(MESECAM)	2
M 9470		4 + 2 (LP)	PAL(MESECAM)/SECAM	2

Export

MODELLE	*MARKE*	*KOEPFE*	*TYPE*	*KATEGORIE*
V 1140 IMC	NORDMENDE	2	PAL(MESECAM)	1
V 1242 SV		2 (LP)	PAL(MESECAM)	1
V 1440 IMC		4 (LP)	PAL(MESECAM)	1
V 1444 SV		4 (LP)	PAL(MESECAM)	1
V 3445 SV		4 + 2 (LP)	PAL(MESECAM)	2
V 4445 SV		4 + 2 + 1 (LP)	PAL / NTSC	2
VR 5020	SABA	2	PAL(MESECAM)	1
VR 5025		2	PAL(MESECAM)	1
VR 5035		3	PAL(MESECAM)	1
VR 5040		4	PAL(MESECAM)	1
M 9420	TELEFUNKEN	2	PAL(MESECAM)	1
M 9425		2 (LP)	PAL(MESECAM)	1
M 9430		3	PAL(MESECAM)	1
M 9443		4	PAL(MESECAM)/SECAM	1
M 9445		4 (LP)	PAL(MESECAM)	1
M 9460		4 + 2 (LP)	PAL(MESECAM)	2
M 9470		4 + 2 (LP)	PAL(MESECAM)/SECAM	2
V 1400	THOMSON	2	PAL(MESECAM)/SECAM	1
VP 2400		2	PAL(MESECAM)/SECAM	1
VP 4480		4 (LP)	PAL(MESECAM)/SECAM	1
VPH 6400		4 + 2	PAL(MESECAM)/SECAM	2
VPH 6480		4 + 2 (LP)	PAL(MESECAM)/SECAM	2
VPH 6490		4 + 2	PAL / SECAM / NTSC	2

INHALT
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I - ALLGEMEINES

Dieses Laufwerk entspricht dem VHS-Standard und wird mit 3 Motoren betrieben: Kopftrommel-, Capstan- (Direktantrieb) und Funktionssteuermotor (zum Antrieb der Wickelteller und der Funktionssteuernocke). Das neue Laufwerk zeichnet sich durch einen Kopftrommelmotor aus, dessen Stator auf der Hauptplatine integriert ist.

II - BESCHREIBUNG DES LAUFWERKS

Liste der wichtigsten Teile:

Abb. 1:

1 - Andruckrolle
2 - Bandführung
6 - Ton- / Kontrollkopf
10 - Trommelantriebseinheit
11 - Löschkopf
13 - Antistatikbürste

Abb. 2:

15 - Bewegliche Bandführung
20 - Funktionsteuermotor
22 - Steuernocke
28 - Antriebsrollenachse
29 - Wickelteller-Antriebsriemen
33 - Zwischenrolleneinheit
42 - Aufnahmesperre
43 - Abwickelteller
44 - Aufwickelteller
47 - Bandzugarm

I - GENERAL

This mechanism complies fully with the VHS standard. It comprises of three motors; drum and capstan, which are both direct drive and a function control driving the function cam mechanism. This mechanism can be identified by the construction of the drum motor, the stator winding are attached to the main board.

II - INTRODUCTION TO THE MECHANISM

List of the main parts :

Fig. 1 :

1 - Pinch roller assembly
2 - Tape guide
6 - Audio / CTL Head
10 - Drum motor assembly
11 - Full Erase head
13 - Anti-static brush

Fig. 2 :

15 - Mobile tape guide
20 - Function control motor
22 - Drive cam
28 - Capstan motor
29 - Reel drive belt
33 - Intermediate pulley
42 - Recording safety lock
43 - Supply reel hub
44 - Take-up reel hub
47 - Tape back tension arm

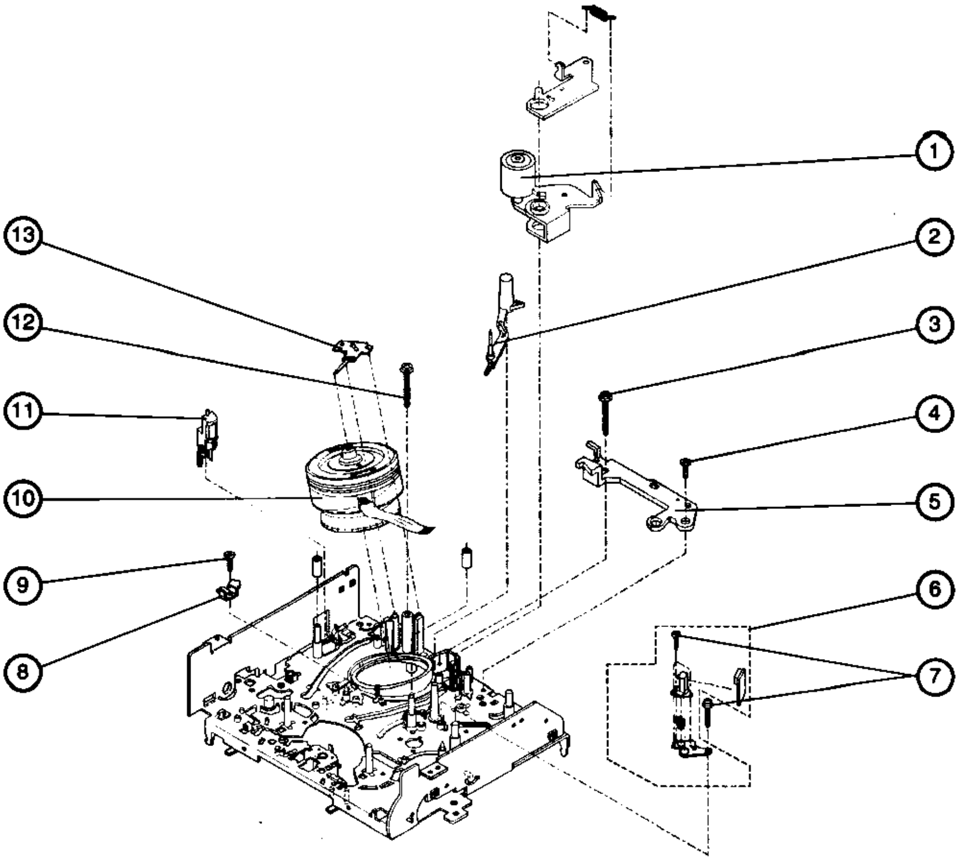


fig. 1

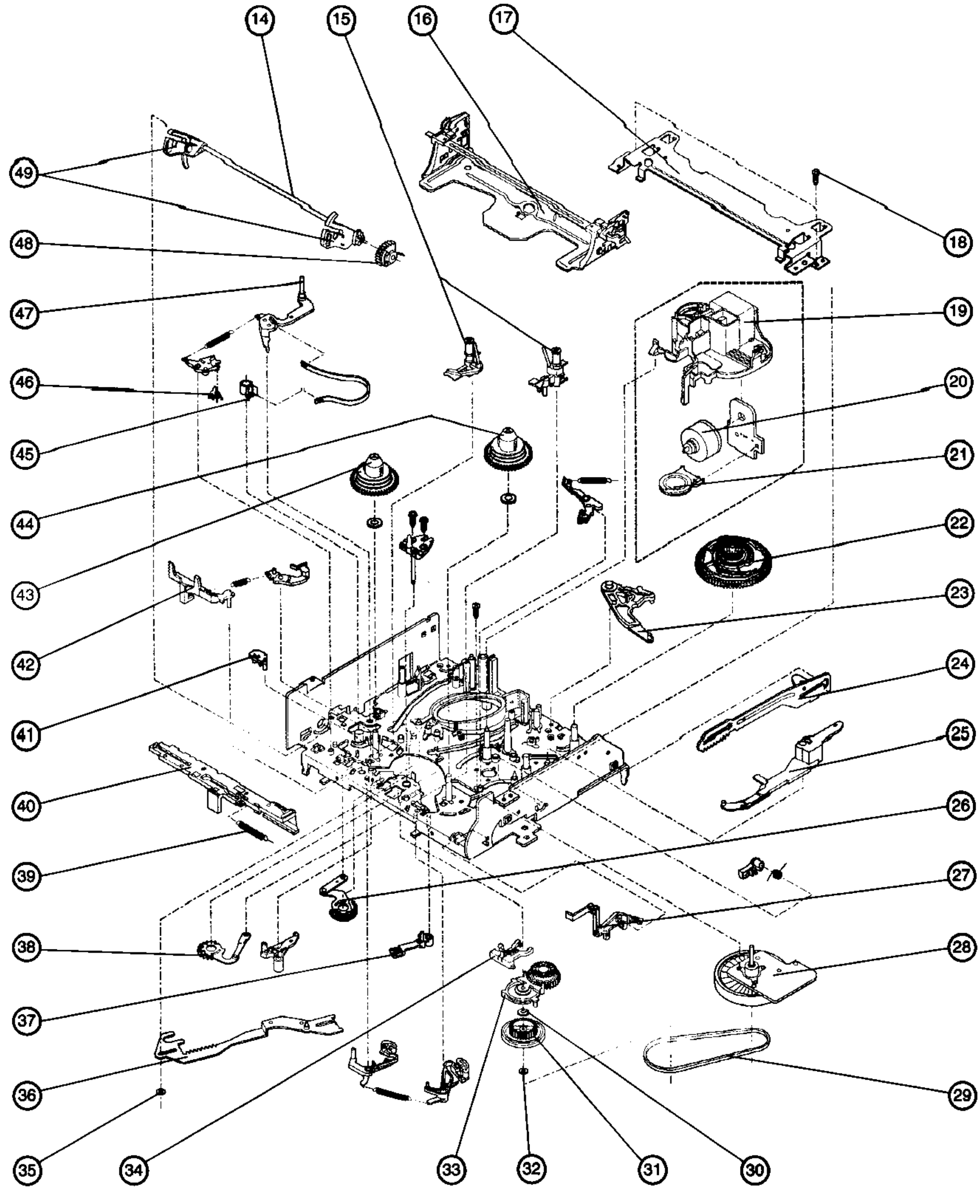


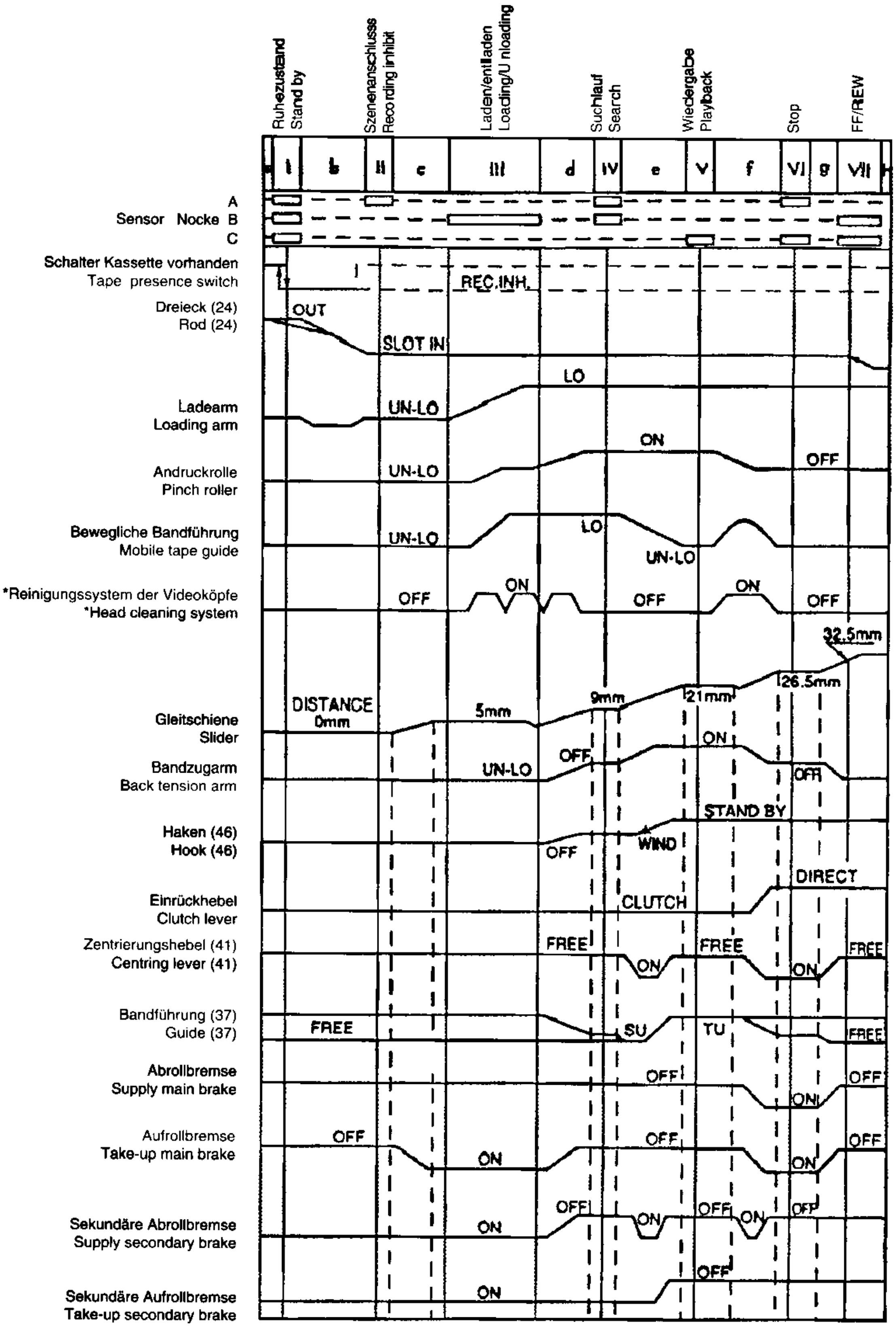
fig. 2

III - FUNKTIONSBESCHREIBUNG

III - DESCRIPTION OF THE OPERATION

1 - KONTROLLE DER FUNKTIONSABLÄUFE

1 - CHECKING FUNCTION SEQUENCE


Ruhezustand
Stand by
Szenenanschluss
Recording inhibit
Laden/entladen
Loading/U nloading
Suchlauf
Search
Wiedergabe
Playback
Stop
FF/REW
I
b
II
c
III
d
IV
e
V
f
VI
g
VII
Sensor Nocke A
B
C
Schalter Kassette vorhanden
Tape presence switch
REC.INH.
Dreieck (24)
Rod (24)
OUT
SLOT IN
Ladearm
Loading arm
UN-LO
LO
Andruckrolle
Pinch roller
UN-LO
ON
OFF
Bewegliche Bandführung
Mobile tape guide
UN-LO
LO
UN-LO
*Reinigungssystem der Videoköpfe
*Head cleaning system
OFF
ON
OFF
ON
OFF
Gleitschiene
Slider
DISTANCE 0mm
5mm
9mm
21mm
26.5mm
32.5mm
Bandzugarm
Back tension arm
UN-LO
OFF
ON
OFF
STAND BY
Haken (46)
Hook (46)
OFF
WIND
Einrückhebel
Clutch lever
CLUTCH
DIRECT
Zentrierungshebel (41)
Centring lever (41)
FREE
ON
FREE
ON
FREE
Bandführung (37)
Guide (37)
FREE
SU
TU
FREE
Abrollbremse
Supply main brake
OFF
ON
OFF
Aufrollbremse
Take-up main brake
OFF
ON
OFF
ON
OFF
Sekundäre Abrollbremse
Supply secondary brake
ON
OFF
ON
OFF
ON
OFF
Sekundäre Aufrollbremse
Take-up secondary brake
ON
OFF

*- If fitted

IV- WARTUNG DES LAUFWERKS

⚠Module nicht bei eingeschaltetem Gerät entfernen ! Servicearbeiten am Netzteil nur unter Verwendung eines Regeltrenntrafos durchführen.

1 - ZUGANG ZUM LAUFWERK

1) ABNEHMEN DES GEHÄUSES *(Abb. 3)*

- 3 Schrauben an der Rückseite des Gehäuses und, falls vorhanden, die zwei seitlichen Schrauben entfernen.
- Das Gehäuseoberteil leicht nach hinten ziehen und abheben.
- Die zwei Schrauben, mit denen die Frontblende befestigt ist, links und rechts am Kassettenschacht entfernen.
- 6 Clips (4 an der Oberseite und 2 an der Unterseite) anheben und die Frontblende abnehmen
- Die 2 Schrauben (S1), mit denen das Netzteil befestigt ist, entfernen. Das Netzteil herausnehmen.
- Verbindungsleitungen zur Frontplatine lösen.
- Die 6 Clips (I1), die die Hauptplatine halten, lösen und die Einheit Laufwerk/Platine herausheben.

2) AUSBAUEN DES LAUFWERKS *(Abb. 3, 4)*

- Verbindungsleitungen zu Funktionskontroll- und Kopftrommel-Motor sowie zum Ton-/ Kontrollkopf lösen.
- Schraube (S2) und Antriebsriemen vom Capstanmotor (29) entfernen.
- Schraube (12) an der Antistatikbürste entfernen.
- Schraube (9) und Metallstück (8) entfernen.
- Die 4 Halteclips (I2) lösen und die Laufwerkseinheit anheben; dabei auf die Anschlüsse des Löschkopfs und des Capstanmotors achten.

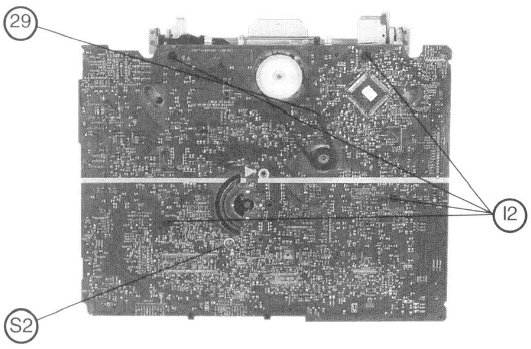


fig. 4

3) AUSBAUEN UND WIEDEREINBAUEN DER KASSETTENHALTERUNG *(Abb. 3 bis 5b)*

AUSBAUEN:*(Abb. 3 und 4)*
- 2 Schrauben links und rechts am Kassettenschacht lösen.
- Den oberen Teil des Kassettenschachtes abheben.
- Den Kassettenhalter bis zum vorderen Anschlag zurückziehen.
- Die zur Kopftrommel zeigende Seite des Kassettenhalters leicht anheben.
- Die weißen Hebel links und rechts am Kassettenhalter entriegeln und den Kassettenhalter in Richtung Kopftrommel schieben, bis die hinteren Führungszapfen aus ihrer Führung genommen werden können
- Jetzt den Kassettenhalter wieder in die entgegengesetzte Richtung ziehen, bis auch die vorderen Führungszapfen aus der Führung genommen werden können.

IV- MECHANISM MAINTENANCE

⚠ Do not disconnect modules when they are energized! Repairs on power supply section are to be carried out only with isolating transformer.

1 - ACCESS TO MECHANISM

1) REMOVAL OF THE CHASSIS *(fig. 3)*

- Remove 3 screws at the rear of the cover and the two side screws.
- Pull the cover slightly backwards and lift it off.
- Remove 2 screws and release 6 clips (4 on the top and 2 on the bottom) securing the front panel.
- Remove 2 screws (S1) securing the power supply unit.
- Carefully remove the power supply unit.
- Unclip the front panel.
- Release 6 clips (I1) securing the main board and lift the mechanism/board assembly out.

2) REMOVAL OF THE MECHANISM *(fig. 3 and 4)*

- Disconnect the function control and drum motors and the audio control head leads.
- Remove screw (S2) and the capstan motor belt (29).
- Remove screw (12) securing the anti-static brush.
- Remove screw (9) and the metal part (8).
- Release the 4 securing clips (I2) and lift the assembly paying attention to the connectors of the full erase head and of the capstan motor.

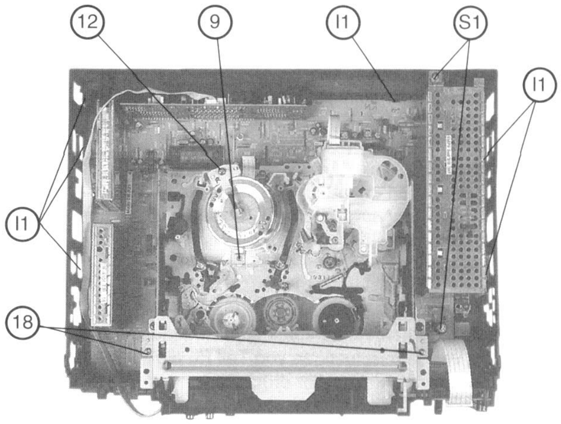


fig. 3

3) REMOVAL AND REFITTING OF THE CASSETTE HOLDER *(fig. 3 to 5b)*

REMOVAL:*(fig. 3 and 4)*
- Take out two screws at the left and the right side of the upper part of the cassette holder.
- Remove the upper part of the cassette holder.
- Pull the remaining part to the upper end position. (Eject position)
- Lift the cassette holder at the side, which shows to the drum
- Release the white levers (left and right of the casstte holder) and push the cassette holder towards the drum until the guide pins at the rear side come out of the guide rails.
- Now pull the cassette holder in the opposite direction until the guide pins at the front side also come out of the guide rails.

WIEDEREINBAUEN:*(Abb. 5a, 5b, 5c und 7)*

- Die vorderen Ansätze des Kassettenträgers wie in Abb. 5a dargestellt einsetzen.
- Die hinteren Ansätze (P1) des Kassettenträgers in Richtung des Trommelmotors kippen.
- Die Hebel (P2) nach oben halten und dabei leicht den Kassettenträgers nach hinten drücken, um so die Ansätze (P3) in die Gleitschienen einzusetzen.
- Den Hebel der Kassettenträgerklappe (27) einsetzen, Abb. 7.
- Die Hebel (P2) wie in Abb.5b dargestellt positionieren, bevor der obere Teil wieder aufgesetzt wird (Abb.5c).

REFITTING:*(fig. 5a , 5b,5c and 7)*

- Move the pins at the front of the cassette holder as shown in figure 5a.
- Move the pins at the back of the cassette holder towards the drum motor.
- Whilst holding the levers , gently push the cassette holder back, so that the back pins go into runners .
- Position the lever of the cassette holder door as shown in figure 7.
- Position the levers as shown in figure 5b before fitting the top unit (figure 5c).

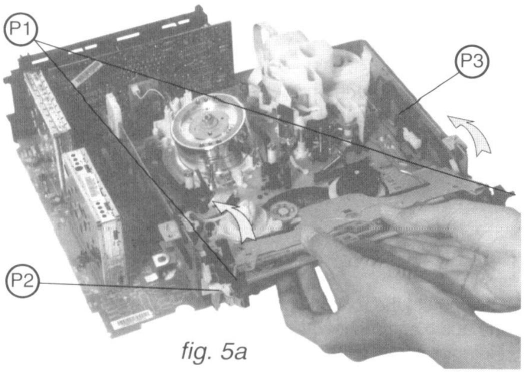


fig. 5a

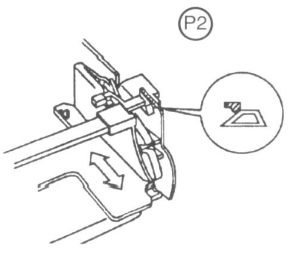


fig. 5b

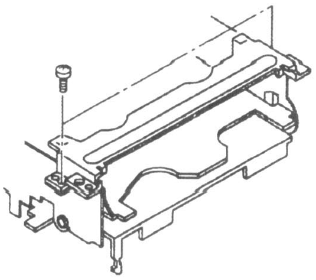


fig. 5c

2 - AUSTAUSCHEN DER WICHTIGSTEN LAUFWERKTEILE

1) AUSTAUSCH DER TROMMELANTRIEBSEINHEIT:

(Abb. 6)

AUSBAUEN:

- Um die Trommelantriebseinheit auszubauen, ist es nicht nötig, das Laufwerk herauszunehmen.
- Den Trommelantrieb abtrennen.
- Schraube (12) und Antistatikbürste entfernen.
- Die Schrauben (3), (4) und (9) sowie die Metallteile entfernen.
- Das Reinigungssystem der Videoköpfe ausbauen.
- Die Trommelantriebseinheit herausnehmen.

WIEDEREINBAUEN:

- In umgekehrter Reihenfolge zum Ausbau vorgehen und dabei vor dem Befestigen von Teil (5) die Trommel leicht gegen den Abwickelteller drücken.
- Den Bandlauf überprüfen.

2 - REPLACEMENT OF THE MAIN PARTS ON THE MECHANISM.

1) REPLACEMENT OF THE DRUM MOTOR:

(fig. 6)

REMOVAL:

- It is not necessary to remove the mechanism, in order to remove the drum motor.
- Disconnect the drum motor.
- Remove screw (12) and the anti-static brush.
- Remove screws (3), (4) and (9) and metal parts.
- Remove video head cleaning system.
- Remove the drum motor.

REFITTING:

- Perform removal operations in reverse order by pushing the drum slightly towards the supply reel before securing the part (5).
- Check the tape path.

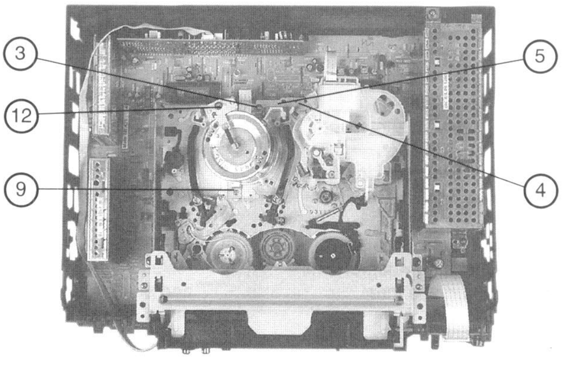


fig. 6

2) AUSTAUSCH DES BANDZUGARMS:
(Abb. 7 und 8)

AUSBAUEN:
- Den Clip (I3) öffnen und den gezahnten Hebel (48) herausziehen.
- Den Hebel (27) entfernen.
- Die Antriebsachse (14) der Kassettenhalterung nach rechts schieben, um sie aus ihrem Sitz zu nehmen.
- Die Achse erst links, dann rechts anheben.
- Die Feder (39) lösen.
- Den Clip (I4) lösen und den Bandzugarm und die Bremse anheben.
- Den Clip (I5) öffnen, um die Befestigung (45) der Bandzugbremse zu lösen.

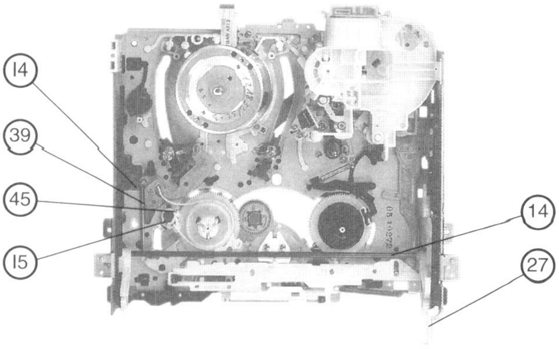


fig. 7

WIEDEREINBAUEN:
- Die Befestigung (45) der Bandzugbremse anbringen.
- Die Bremse um den Abwickelteller legen.
- Den Bandzugarm einsetzen und andrücken, um ihn festzuklemmen.
- Die Feder (39) wieder anbringen.
- Die Achse (14) in ihren Sitz einsetzen.
- Den gezahnten Hebel (48) einsetzen und dabei den ersten Zahn mit dem Kennzeichen (M1) ausrichten.
- Nach dem Austausch des Bandzugarms muß dessen Position gemäß der Angaben auf Seite 13 neu eingestellt werden.

3) AUSTAUSCH VON TON-UND KONTROLLKOPF:
(Abb.9)

AUSBAUEN:
- Den Stecker (C1) herausziehen.
- Die 2 Schrauben (7) entfernen und dann die Kontrollkopfeinheit anheben.

2) REPLACEMENT OF THE TAPE BACK TENSION ARM
(fig. 7 and 8)

REMOVAL:
- Release clip (I3) and remove the toothed lever (48).
- Remove lever (27).
- Slide the cassette holder pin (14) to the right in order to release it from its housing.
- Lift the pin from the left and then from the right.
- Remove spring (39).
- Release clip (I4) and lift the tape back tension arm and brake.
- Release clip (I5) in order to free the attachment (45) of the tape back tension brake.

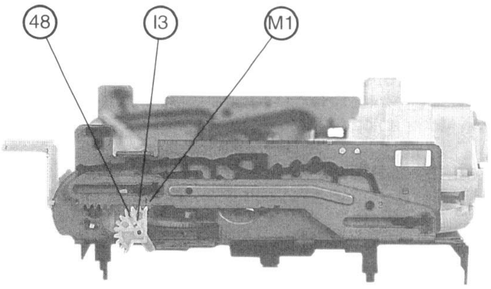


fig. 8

REFITTING:
- Fit attachment (45) of the tape back tension brake.
- Wind the brake around the supply reel.
- Insert the tape tension arm and press to clip in to position.
- Refit spring (39).
- Refit pin (14) in its housing.
- Fit the toothed part (48) by aligning the first tooth with the marking (M1).
- After replacing the tape back tension arm, its position must be re-set as shown in page 13.

3) REPLACEMENT OF THE AUDIO-CONTROL HEAD.
(fig. 9)

REMOVAL:
- Disconnect connector (C1).
- Remove 2 screws (7) and lift the audio-control head.

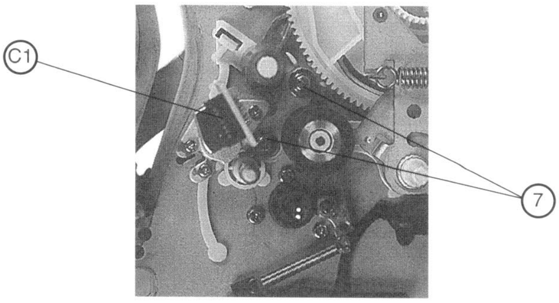


fig. 9

WIEDEREINBAUEN:

- In umgekehrter Reihenfolge zum Ausbau vorgehen.
- Folgende Einstellungen vornehmen: Azimut, Höhe, Neigungswinkel und Kompatibilität (siehe Seite 15, Abschnitt B).

4) AUSTAUSCHEN DES FUNKTIONSKONTROLLMOTORS:

(Abb. 10 und 11)

AUSBAUEN:

- Das Reinigungssystem der Videoköpfe ausbauen.
- In der angegebenen Reihenfolge die 4 Clips (I6), (I7), (I8) und (I9) lösen. Dann die Einheit Gehäuse /Funktionskontrollmotor anheben.
- Das Teil (P4) nach vorherigem Öffnen des entsprechenden Clips anheben.
- Das Getriebe (P5) herausnehmen.
- Das Ende der Gewindestange (P6) leicht anheben.
- Den Clip (I10) des Funktionsschalters lösen.
- Die Einheit Motor/Schalter aus der Gleitschiene (P7) nehmen.
- Den Motor ablöten.

WIEDEREINBAUEN:

- Darauf achten, daß das Loch (H1) der Nocke über dem des Gehäuses liegt.
- In umgekehrter Reihenfolge zum Ausbau vorgehen, ohne dabei zu vergessen, die Gewindestange in ihre Clips einzusetzen und darauf zu achten, daß die Kennzeichen (M2) des Funktionsschalters und (M3) des Gehäuses übereinstimmen.

REFITTING:

- Perform the removal operations in reverse order.
- Adjust the azimuth, height, inclination and check compatibility (see page 15 section B).

4) REPLACEMENT OF THE FUNCTION CONTROL MOTOR:

(fig. 10 and 11)

REMOVAL:

- Remove the video head cleaning system.
- Release, in this order, 4 clips (I6), (I7), (I8) and (I9) securing the casing and function control motor assembly and lift it.
- Lift part (P4) after releasing its clip.
- Remove gear (P5).
- Slightly lift the end of the worm screw (P6).
- Release clip (I10) of the function switch.
- Remove the motor/switch assembly from the slide rail (P7).
- Unsolder the motor connections.

REFITTING:

- Check that hole (H1) on the cam is exactly over the hole on the chassis.
- Perform removal operations in reverse order remembering to insert the worm screw in its clips and making sure that the markings (M2) on the function switch correspond to the markings (M3) on the casing.

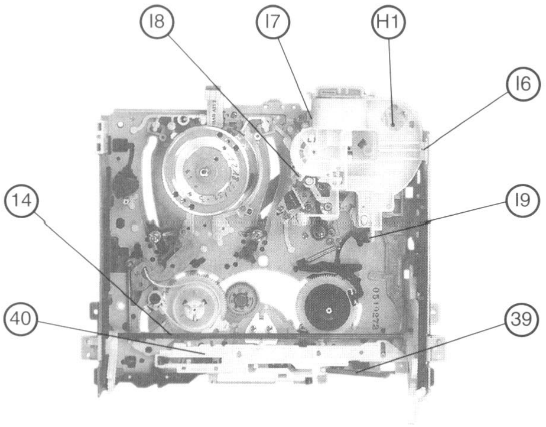


fig. 10

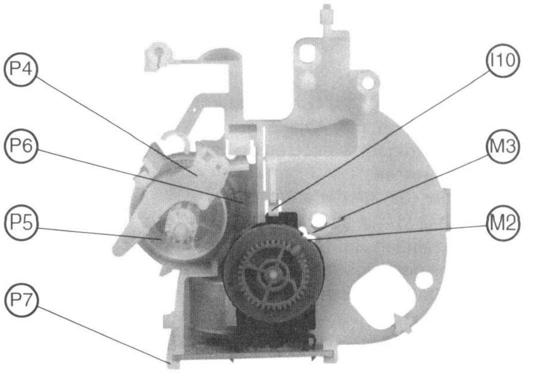


fig. 11

5) AUSTAUSCH DER FUNKTIONSSTEUERNOCKE:

(Abb. 10, 12, 13 und 14)

AUSBAU:

- Die Einheit Gehäuse/Funktionskontrollmotor gemäß den Angaben des vorherigen Kapitels ausbauen.
- Die Antriebsachse (14) der Kassettenhalterung ausbauen.
- Die Feder (39) und die Gleitschiene (40) entfernen.
- Die Andruckrolle (1) und den Hebel (25) entfernen.
- Die Nocke herausnehmen.

5) REPLACEMENT OF THE CONTROL CAM:

(fig. 10, 12, 13 and 14)

REMOVAL:

- Remove the casing and function control motor assembly as discribed in the previous section 4.
- Remove cassette holder drive pin (14) .
- Remove spring (39) and the slide rail (40).
- Remove pinch roller (1) and the lever (25).
- Remove the cam.

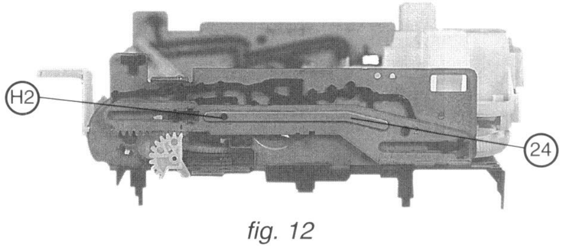


fig. 12

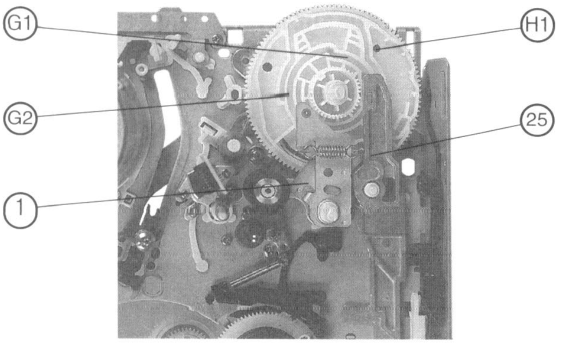


fig. 13

WIEDEREINBAUEN:

- Die beweglichen Bandführungen und den Bandzugarm am Anschlag "Ausgabe" festhalten.
- Den Hebel (23) montieren und dabei sorgfältig seinen Zapfen in das Loch des Dreiecks (24) einführen.
- Das Dreieck (24) so positionieren, daß das Loch (H2) über dem des Gehäuses liegt.
- Die Nocke so positionieren, daß das Loch (H1) über dem des Gehäuses liegt.
- Den Hebel (25) einsetzen und dabei seinen Zapfen in die Auskehlung (G1) einführen.
- Die Andruckrolle unter Einführen des Zapfens in die Auskehlung (G2) anbringen und dann die Einheit Gehäuse/Funktionskontrollmotor einsetzen. Dabei ist darauf zu achten, daß das Kennzeichen auf dem Schalter dem des Gehäuses gegenüberliegt.
- Die Gleitschiene (40) einsetzen und die Feder (39) wieder anbringen.

6) AUSTAUSCH DER LADEARME:

(Abb. 15 und 16)

AUSBAU:

- Den Clip (35) entfernen und den Antriebshebel (36) der Ladearme abnehmen.
- Die Ladearme anheben.

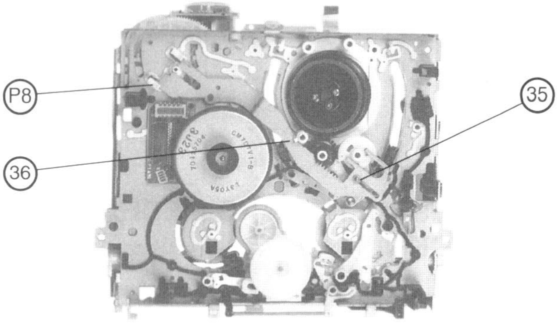


fig. 15

WIEDEREINBAU:

- Die beweglichen Bandführungen am Anschlag "Ausgabe" festhalten.
- Erst den Aufroll- dann den Abroll-Ladearm einbauen, und zwar so, daß sich die Kennzeichen (M4) und (M5) gegenüberliegen.
- Das Ende des Hebels (36) soweit in die Gleitschiene (P8) schieben, bis sich das Kennzeichen (M6) und der erste Zahn des Aufrollgetriebes einander gegenüberliegen.
- Den Clip wieder anbringen.

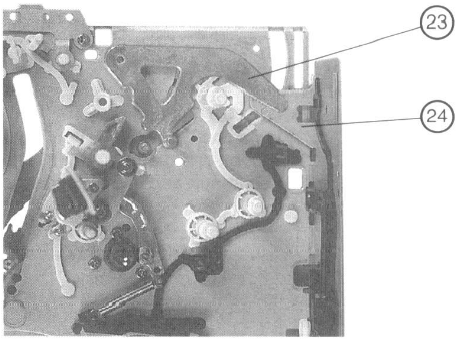


fig. 14

REFITTING

- Hold the mobile guide rails and the tape back tension arm against the unloading stop.
- Fit lever (23) making sure that the nipple is fitted inside the hole on the rod (24).
- Position the rod (24) so that hole (H2) is exactly over the hole on the chassis.
- Position the cam so that hole (H1) is exactly over the hole on the chassis.
- Fit lever (25) by inserting its nipple in the groove (G1).
- Fit the pinch roller by inserting its nipple in the groove (G2) and then fit the casing and function control motor assembly, making sure that the marking on the switch is opposite the marking on the casing.
- Fit slide rail (40) and spring (39).

6) REPLACEMENT OF THE TAPE LOADING ARMS

(fig. 15 and 16)

REMOVAL:

- Remove clip (35) and remove the tape loading arm drive lever (36).
- Remove the take-up and supply insertion arms.
- Remove mobile tape guides .

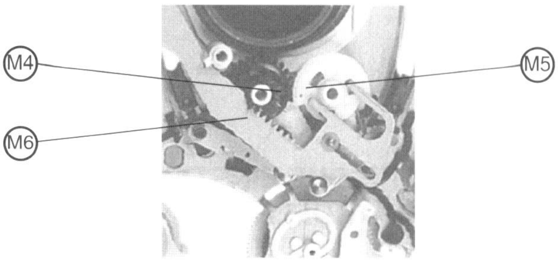


fig. 16

REFITTING:

- Fit the mobile tape guides and hold against the play position on the main deck.
- Fit the take-up guide insertion arm followed by the supply guide insertion arm making sure that the alignment holes (M4) and (M5) are facing each other.
- Insert the end of the lever (36) in the slide rail (P8) and then slide it until the marking (M6) is facing the first tooth of the take-up gear.
- Refit the clip.

7) AUSTAUSCHEN DES ZWISCHENGETRIEBES:
(Abb. 17, 18 und 19)

AUSBAUEN:

- Die Gleitschiene (40) ausbauen.
- Den Clip (32) und das Getriebe (31) entfernen.
- Den Clip (I11) lösen und die Führung (37) herausnehmen.
- Den Clip (30) entfernen und das Zwischengetriebe (33) anheben.

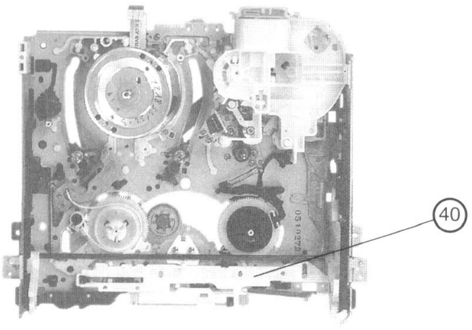


fig. 17

WIEDEREINBAUEN:

- Den Einrückhebel (34) in die Auskehlung des Zwischengetriebes einführen und dann dieses auf seiner Achse positionieren.
- In umgekehrter Reihenfolge zum Ausbau vorgehen.

7) REPLACEMENT OF THE INTERMEDIATE PULLEY:
(fig. 17, 18 and 19)

REMOVAL:

- Remove slide rail (40).
- Remove clip (32) and gear (31).
- Release clip (I11) and remove guide (37).
- Release clip (30) and lift the intermediate pulley (33) off.

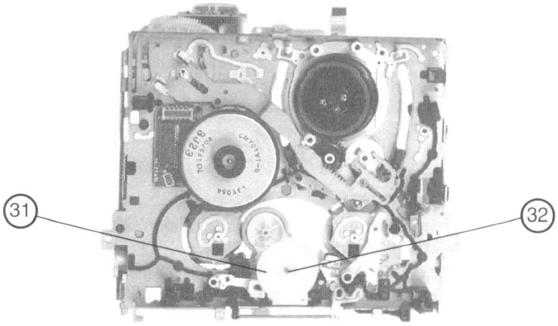


fig. 18

REFITTING :

- Insert the clutch tab (34) in the groove of the intermediate pulley and fit the latter on its spindle.
- Perform the removal operations in reverse order for the other parts.

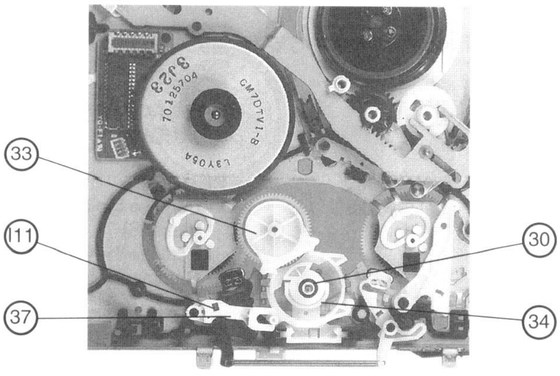


fig. 19

V - MECHANISCHE EINSTELLUNGEN UND KONTROLLEN

ERFORDERLICHES MATERIAL:

- Bandzug-Meß-Kassette.
- Kassette MH4.
- Zweistrahloszilloskop mit Bandbreite >10 MHz.
- Fernsehgerät oder Farbmonitor.

1 - EMPFEHLUNGEN DES HERSTELLERS:

- Nach allen Eingriffen an einem Laufwerk ist es ratsam, die Reinigungs-, Überprüfungs und Einstellarbeiten des Bandlaufs vorzunehmen.

V - ADJUSTMENTS AND MECHANICAL CHECKS

EQUIPMENT REQUIRED:

- Torque measurement cassette .
- MH4 tape.
- One dual-trace oscilloscope, pass band > 10 MHz.
- One colour television set or monitor.

1 - MANUFACTURER RECOMMENDATIONS:

- Before any work is carried out on the mechanism, the tape path should be cleaned, checked and adjusted.
- Check that the mobile tape guides rotate freely.

- Stellen Sie sicher, daß sich die beweglichen Bandführungen frei drehen.
- Nach dem Einlegen der Kassette prüfen, ob sich die beweglichen Bandführungen in ihren Endpositionen befinden.
- Prüfen, ob die Capstanachse und die Andruckrolle parallel zueinander stehen.
- Mit einem Tupfer alle Partien reinigen, die sich in direktem Kontakt zum Band befinden.
- Zur Reinigung der Kopftrommel, der Videoköpfe und des Drehtransformators wird empfohlen, Baumwollhandschuhe zu tragen, um Fettablagerungen auf den Flächen zu verhindern, die mit dem Band in Berührung kommen.

2 - EINSTELLEN DER BANDZUGBREMSE:

(Abb. 20)

- Die Kassettenhalterung ausbauen.
- Den Videorecorder auf Wiedergabe schalten.
- Mit einem Schraubendreher die Schraube (S3) soweit festdrehen, bis sich der BANDZUG-Fühlhebel 7,5 ± 1mm vom Gehäuserand entfernt befindet (durch den langen Strich (M7) gekennzeichnet).
- Den Bandzug wie nachstehend angegeben überprüfen.

- After insertion, check that the mobile tape guides are correctly positioned in their stops.
- Check that the capstan shaft and the pinch roller are parallel.
- Using a pad, clean all the parts directly in contact with the tape.
- To clean the video head drum , it is recommended to wear cotton gloves and use a pad so that there are no grease marks left on the surfaces in contact with the tape.

2 - TAPE BACK TENSION BRAKE ADJUSTMENT

(fig. 20)

- Remove the cassette holder.
- Set mechanism in playback mode.
- Using a screwdriver turn screw (S3) so that the arm tension pin is 7.5 ± 1 mm from the edge of the chassis (marked by the long line (M7)).
- Check the tape tension as shown below.

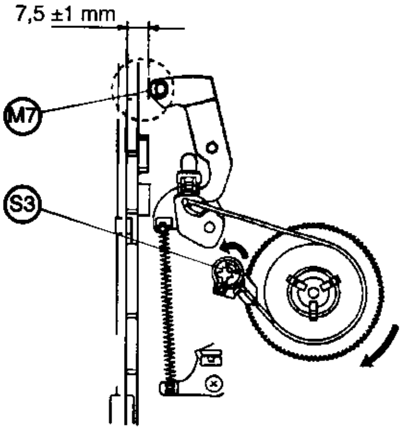


fig. 20

3 - ÜBERPRÜFUNG DES BANDZUGS UND DES WICKELTELLER-DREHMOMENTES:

BANDZUG :

- Die Bandzug-Meßkassette abspielen.
- Der Bandzug auf dem Abwickelteller muß zwischen **45** und **95** g/cm betragen.
- Wenn der Bandzug nicht in diesem Bereich liegt, die Wickelteller-Kopplungseinheit austauschen.

WICKELTELLER-DREHMOMENT :

- Das Drehmoment des Aufwickeltellers muß zwischen **125** und **200** g/cm betragen.
- Wenn der Bandzug nicht in diesem Bereich liegt, die Wickelteller-Kopplungseinheit austauschen.

4 - STATIK-EINSTELLUNGEN AM BANDLAUF:

(Abb. 21)

VORSICHTSMASSNAHMEN:

Der Bandlauf wurde im Werk präzise eingestellt, er braucht also nicht nachgestellt werden. Dennoch können Verschleißerscheinungen oder ein Defekt des Gerätes, der

3 - CHECKING THE BACK TAPE TENSION AND THE SUPPLY REEL TORQUE:

TAPE TENSION:

- Use the torque measurement cassette in the Playback mode.
- The tension on the tape on the reel must be between **45** and **95** gr/cm.
- If the tension lies outside these values, replace the clutch assembly.

REEL TAKE-UP TORQUE:

- The torque on the take-up reel must be between **125** and **200** gr/cm.
- If this is not the case, replace the take-up reel drive clutch assembly.

4 - STATIC ADJUSTMENTS OF THE TAPE PATH: *(fig. 21)*

PRECAUTIONS:

The video tape path is precisely aligned at the factory and breakdown may require the replacement of parts and necessitate the adjustment of the tape path. For this

das Auswechseln eines sich auf dem Bandlauf befindlichen Teiles erforderlich macht, dazu führen, daß der Bandlauf neu eingestellt werden muß. **Wir empfehlen, für diesen Arbeitsgang keine Abgleich-Kassette zu verwenden**. Schalten Sie das Gerät auf Wiedergabe und ziehen Sie nach erfolgtem Einfädeln den Netzstecker. Überprüfen Sie die richtige Bandlage in der Mechanik: das Band muß den Bandzugpin, den Löschkopf, die beweglichen Bandführungen, die Ton-/Kontrollkopfeinheit, die Videokopftrommel und die festen Aufrollbandführungen berühren.

operation, it is recommended that the alignment test tape is not used. Load a normal video cassette, select the PLAYBACK mode and allow the tape to fully load, switch OFF the power . Check that the tape is correctly loaded around the mechanism, the tape must be in contact with the following items, back tension pole, the full erase head, tape guides, video head drum and audio-control head.

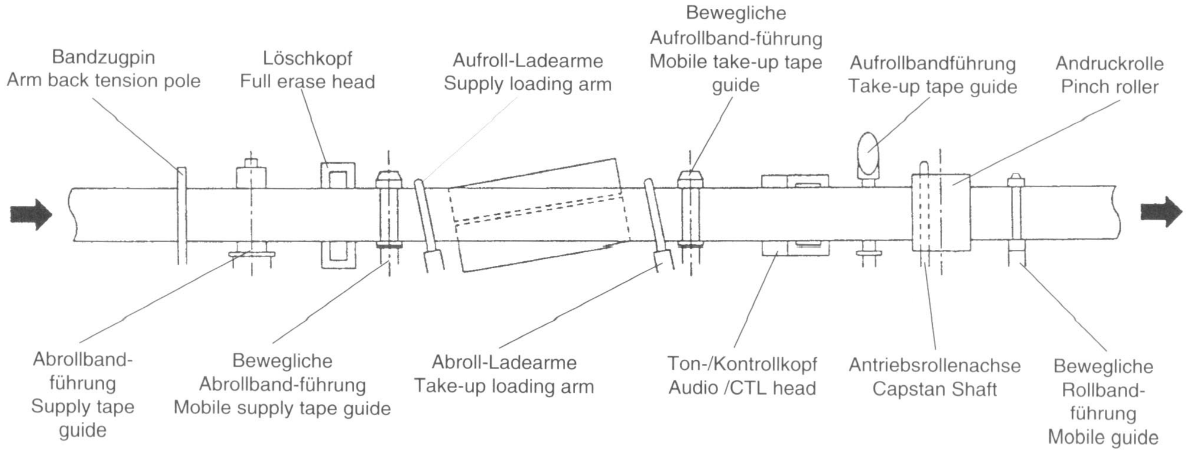

Bandzugpin
Arm back tension pole
Löschkopf
Full erase head
Aufroll-Ladearme
Supply loading arm
Bewegliche
Aufrollband-führung
Mobile take-up tape
guide
Aufrollbandführung
Take-up tape guide
Andruckrolle
Pinch roller
Abrollband-
führung
Supply tape
guide
Bewegliche
Abrollband-führung
Mobile supply tape guide
Abroll-Ladearme
Take-up loading arm
Ton-/Kontrollkopf
Audio /CTL head
Antriebsrollenachse
Capstan Shaft
Bewegliche
Rollband-
führung
Mobile guide

fig. 21

VOREINSTELLUNG DER BEWEGLICHEN BANDFÜHRUNGEN:
Wenn das Band an einer der Bandführungen nicht glatt anliegt, diese so einstellen, bis das Band glatt anliegt.

VOREINSTELLUNG DES TON-/KONTROLLKOPFES:
(Abb. 22)
Wenn das Band an der festen Aufrollbandführung nicht glatt anliegt, den Neigungswinkel (I) der Ton-/Kontrollkopfeinheit nachstellen.

MOBILE TAPE GUIDE PRE-SETTING:
If there is tape folding on one of the mobile tape guide, adjust the position of the guide for correct alignment.

AUDIO CONTROL HEAD PRE-SETTING:
(fig. 22)
If the tape folds on the take-up tape guide, adjust the inclination (I) of the audio control head.

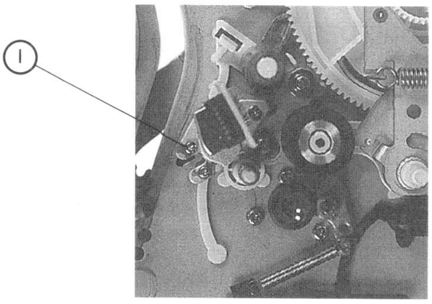


fig. 22

5 - DYNAMIK-EINSTELLUNGEN AM BANDLAUF:

Für diese Dynamik-Einstellungen:
- Die Kassettenhalterung ausbauen.
- Die Grauabstufungen der Referenzkassette ablesen.
- Auf einem Zweistrahl-Oszilloskop (mit Drum Flip Flop (BT002) getriggert) das Video-FM-Signal (BV131) sichtbarmachen (Umschalten der Videoköpfe auf Wiedergabe).

5 - DYNAMIC ADJUSTMENTS ON THE TAPE PATH:

For these dynamic adjustments:
- Remove the cassette holder.
- Playback the grey scale section on the alignment tape.
- Display on a dual-trace oscilloscope the FM video signal (BV131) synchronized by the 25 Hz flip-flop (BT002) (switching of the video heads in playback mode).

A - Feineinstellung der beweglichen Bandführungen:

(Abb. 23)

Die optimale Einstellung ist erreicht, wenn die FM-Hüllkurve von Spuranfang bis Spurende eine konstante Amplitude hat. Eine schlechte Einstellung der beweglichen Abrollbandführung zieht entweder ein Rasterflimmern oder einen Rauschbalken im oberen Teil des Bildes nach sich.
Gleichen Sie die bewegliche Abrollbandführung so ab, daß jegliche Stauchung der FM-Hüllkurve am Spuranfang vermieden wird. Eine schlechte Einstellung der beweglichen Aufrollbandführung zieht Rauschbalken im unteren Teil des Bildes nach sich.
Gleichen Sie die bewegliche Aufrollbandführung so ab, daß jegliche Stauchung der FM-Hüllkurve am Spurende vermieden wird.
Stellen Sie durch Betätigen der Spurlagenfunktion sicher, daß die Amplitude der FM-Hüllkurve von Spuranfang bis Spurende gleichmäßig abnimmt. Falls dies nicht der Fall ist, wiederholen Sie bitte den Abgleich.

A - Fine adjustment of the mobile tape guides:

(fig. 23)

The optimum adjustment is obtained when the amplitude of the FM envelope is constant from the beginning to the end of the track.
If the mobile supply tape guide is incorrectly set, either the frame jumps or there is a noise bar at the top of the screen.
Adjust the mobile supply tape guide to eliminate any constriction of the FM envelope at the beginning of the track.
If the mobile take-up tape guide is incorrectly set, there will be noise bars at the bottom of the screen.
Adjust the mobile take-up tape guide to eliminate any constriction of the FM envelope at the end of the track.
Check, using the tracking control, that the amplitude of the FM envelope decreases in a linear manner from the beginning to the end of the track. If there is pinching of the envelope on the supply or take-up side, re-adjust the corresponding tape guide.

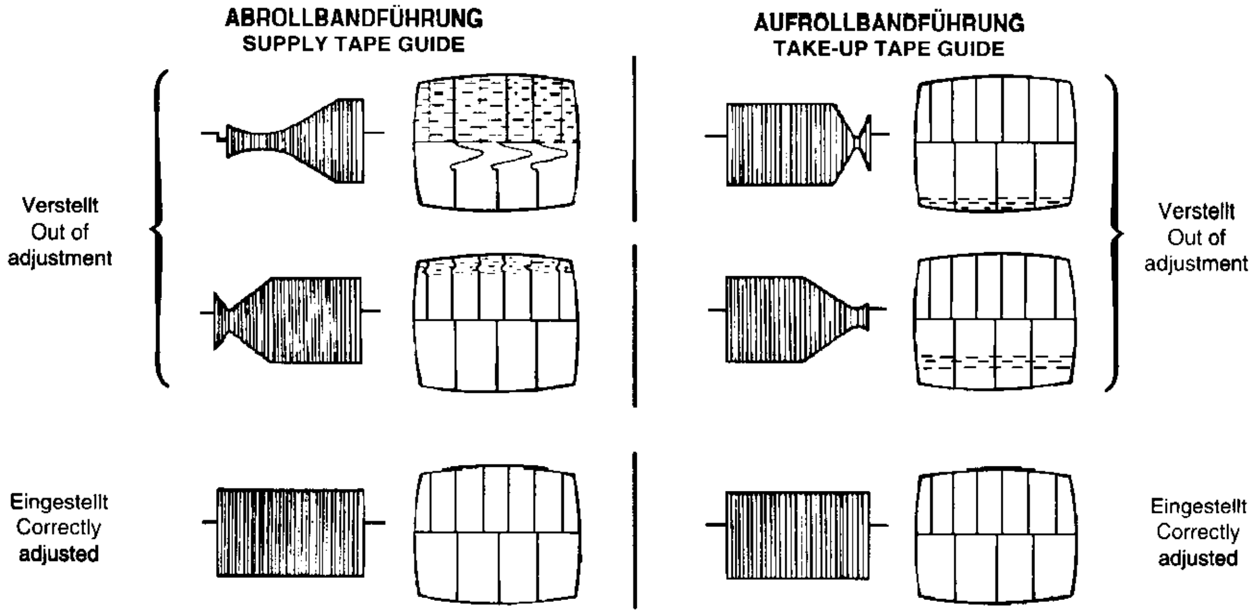


fig. 23

B - Feineinstellung des Ton- / Kontrollkopfes

(ABB. 24 und 25)

Die richtige Einstellung der Lage des Ton- / Kontrollkopfes ist notwendig, um ein korrektes Audio-Ausgangssignal und einen optimalen Rauschabstand zu garantieren.
Ein Abgleichfehler kann außerdem zu einer Instabilität in der Servo-Regelung führen. Besonders wichtig ist diese Einstellung bei Geräten mit Index Suchlauf.
Zur Beobachtung des Audio-Signals wird ein Oszilloskop an den Audio Ausgang angeschlossen.

- Testkassette mit Grautreppe und Audio-Signal (6kHz) abspielen.
- Die Azimut-Schraube (A) nachstellen, bis das Maximum des Audio-Signals am Ausgang erreicht ist.
- Die Höhe des Ton- /Kontrollkopfes mit der Mutter (H) so einstellen, daß das Audio-Signal eine flache Hüllkurve aufweist.
- Die Schrauben (A) und (H) abwechselnd und immer nur wenig (nicht mehr als 45° auf einmal) nachstellen, um einen maximalen Audio-Pegel am Ausgang zu erzielen.

B - Fine adjustment of the audio control head :

(fig. 24 and 25)

The position of the audio control head must be correctly set to ensure that the audio output and the signal /noise ratio are correct.
A misalignment may cause the servo circuits to be unstable. The precision of the adjustment is particularly important for models with index search.
To observe the audio signal, connect an oscilloscope to the AUDIO output.

- Playback the grey scale pattern on video cassette (Audio 6 kHz).
- Adjust the azimuth screw (A) to obtain the maximum output level.
- Adjust the height of the audio control head on the screw (H) so that the envelope of the audio signal is flat.
- Adjust the screws (A) and (H) in alteration and in small steps (45° at a time) to obtain the maximum output level.

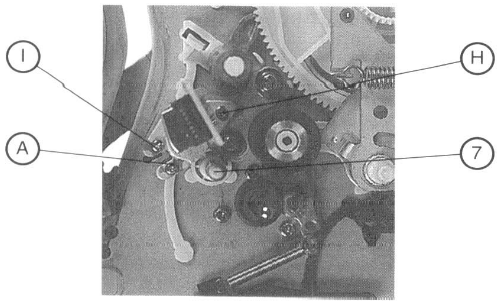


fig. 24

C - Kompatibilitätseinstellung *(Abb. 24)*

Zunächst muß der Videorecorder in sich kompatibel sein. Dazu ein Farbbalken-Testbild aufnehmen und überprüfen, ob die Wiedergabe dieser Aufnahme optimal ist.

- Den Tastkopf eines Oszilloskops an den FM-Ausgang (BV131) anschließen.
- Spurlagenfunktion aufrufen und durch Drücken der "+" und "-" Tasten die Spurlage auf Null stellen.
- Das Oszilloskop extern mit dem Kopftrommel-Schaltsignal (Drum Flip Flop) triggern. Die positive Flanke zum Triggern verwenden, um das Signal von Kopf 2 darzustellen.
- FM-Wert für die Grautreppe ablesen.
- Die Schraube (7) lösen.
- Den Ton- / Kontrollkopfes unter Beachtung des Signals auf den Videoköpfen mit einem Kreuzschraubenzieher, der in die Einkerbung gesetzt wird (ohne das Gehäuse zu durchqueren), drehen, um den FM-Pegel auf Maximum zu stellen. Die Schraube (7) sofort wieder anziehen.
- Durch Betätigung der Spurlage-Funktion überprüfen, ob das Maximum des FM-Pegels in der Nullstellung erreicht ist.

VI - ÜBERPRÜFUNG DES LAUFWERKS UND FEHLERSUCHE

1 - ÜBERPRÜFUNG VON MOTOR- UND SENSORSYSTEM

Motor- und Sensorsystem wie in dem Diagramm auf Seite 17 dargestellt auf Fehlfunktionen untersuchen.

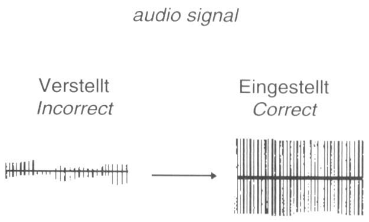


fig. 25

C - Compatibility adjustment *(fig. 24)*

First of all, the video recorder must be made compatible with itself, it is therefore, necessary to record a colour bar test pattern and check that the playback of this recording is optimum.

- Connect the probe of the oscilloscope envelope to the FM output (BV131).
- Enter the tracking mode and select manual tracking.
- Press on the + and - keys and set the track to 0.
- Synchronize the oscilloscope with the head switching flip-flop. Use the positive trigger to display the signal from head 2.
- Playback the grey scale pattern.
- Loosen the screw (7).
- While observing the signal on the video heads, tilt the audio control head,using a Philips screwdriver placed in the notch (so as not to pass through the chassis), in order to obtain the maximum output level. Tighten the screw (7) immeddiately
- Check by pressing the + and - phase keys that the signal is maximum for a track equal to 0.

VI - MECHANICAL DECK TROUBLE SHOOTING AND CHECK METHOD

1 - MOTOR SENSOR SYSTEM CHECK

Check whether any abnormalities are found in the motor or the sensor system as follows in the flow chart on page 17

Der Abstand von ▲ ist zulässig, wenn er innerhalb von 3 mm liegt
The clearance of ▲is allowable if it is within 3 mm

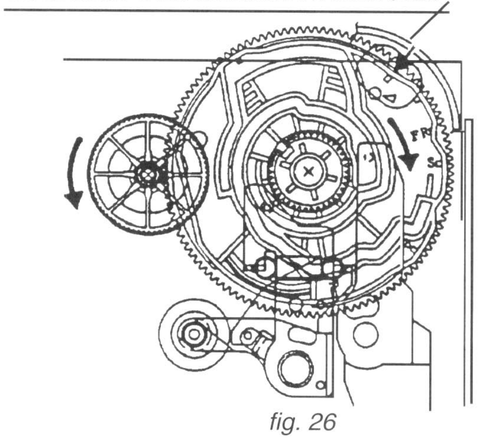
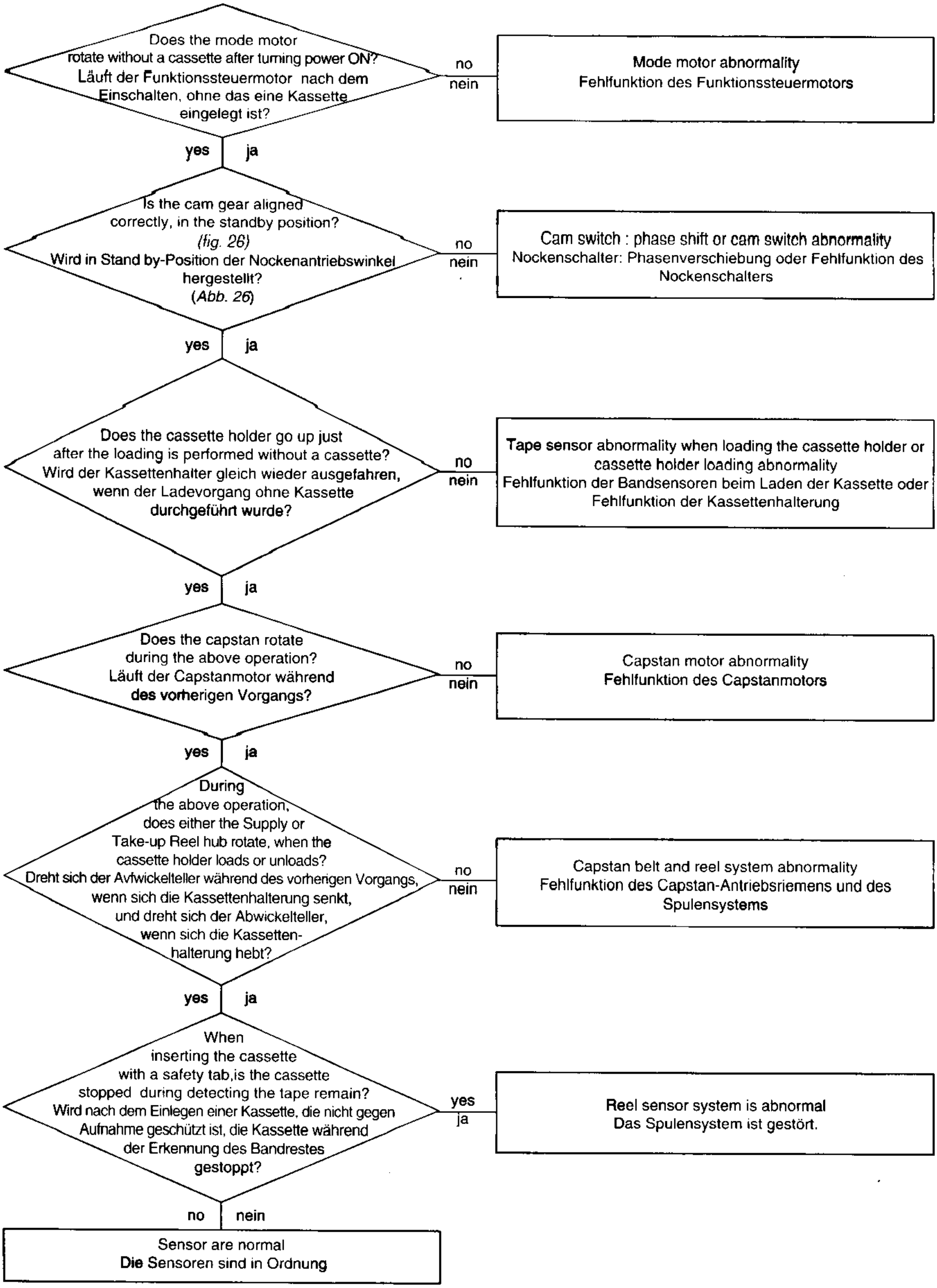


fig. 26



Does the mode motor rotate without a cassette after turning power ON?
Läuft der Funktionssteuermotor nach dem Einschalten, ohne das eine Kassette eingelegt ist?

no / nein: **Mode motor abnormality**
Fehlfunktion des Funktionssteuermotors

yes / ja:

Is the cam gear aligned correctly, in the standby position? (*fig. 26*)
Wird in Stand by-Position der Nockenantriebswinkel hergestellt? (*Abb. 26*)

no / nein: Cam switch : phase shift or cam switch abnormality
Nockenschalter: Phasenverschiebung oder Fehlfunktion des Nockenschalters

yes / ja:

Does the cassette holder go up just after the loading is performed without a cassette?
Wird der Kassettenhalter gleich wieder ausgefahren, wenn der Ladevorgang ohne Kassette durchgeführt wurde?

no / nein: Tape sensor abnormality when loading the cassette holder or cassette holder loading abnormality
Fehlfunktion der Bandsensoren beim Laden der Kassette oder Fehlfunktion der Kassettenhalterung

yes / ja:

Does the capstan rotate during the above operation?
Läuft der Capstanmotor während des vorherigen Vorgangs?

no / nein: Capstan motor abnormality
Fehlfunktion des Capstanmotors

yes / ja:

During the above operation, does either the Supply or Take-up Reel hub rotate, when the cassette holder loads or unloads?
Dreht sich der Avfwickelteller während des vorherigen Vorgangs, wenn sich die Kassettenhalterung senkt, und dreht sich der Abwickelteller, wenn sich die Kassettenhalterung hebt?

no / nein: Capstan belt and reel system abnormality
Fehlfunktion des Capstan-Antriebsriemens und des Spulensystems

yes / ja:

When inserting the cassette with a safety tab,is the cassette stopped during detecting the tape remain?
Wird nach dem Einlegen einer Kassette, die nicht gegen Aufnahme geschützt ist, die Kassette während der Erkennung des Bandrestes gestoppt?

yes / ja: Reel sensor system is abnormal
Das Spulensystem ist gestört.

no / nein: Sensor are normal
Die Sensoren sind in Ordnung

2 - CHECKLISTE FÜR DIE FEHLERSUCHE

2 - TROUBLESHOOTING CHECKLIST

Case - Fall	Fault/symptom - Fehler/Symptom	Possible cause - mögliche Ursache	Check method - Überprüfung
1	• Power doesn't turn on. Loading operation is defective. Mode shift operation is defective. • Das Gerät schaltet nicht ein. Fehlerhafter Ladevorgang. Fehlerhafter Umspringvorgang.	• Mechanism stops due to mechanical phase mismatch. • blockierung aufgrund von Phasenverschiebung in der Mechanik	• Check mode shift "cassette out FF/REW position can be performed when turning worm wheel. • Überprüfen, ob das Umspringen von FF auf REW möglich ist, wenn das Schneckenrad gedreht wird.
	• Loading operation is not performed • Ladevorgang erfolgt nicht	• Loading motor doesn't rotate.(loading motor is defective or circuit is defective) • Lademotor läuft nicht. (Lademotorfehler, Schaltkreisfehler)	• Check loading motor whether it turns by the outer power supply (12,5V) • Überprüfen, ob der Lademotor mit einem externen Netzteil läuft (12,5V)
	• Unloading operation is not performed • Entladevorgang erfolgt nicht	• S reel does'nt wind the tape • Der Abwickelteller spult nicht auf	• Refer to case 3 in this table. • Siehe Fall 3.
2	• Playback operation is not performed • Keine Wiedergabe	• Main brake is not released (ON) T soft brake is not released (ON) Idler does'nt swing Pinch doesn't press • Hauptbremse nicht gelöst (ON) Aufrollhilfsbremse nicht gelöst (ON) Zwischenrad ist blockiert. Andruckrolle drückt nicht	• Check mechanical position as in playback mode • Position der Mechanikteile überprüfen (Wiedergabe)
		• Capstan motor doesn't rotate (capstan motor is defective or circuit is defective) • Capstanmotor läuft nicht (Capstanmotor-, Schaltkreisfehler)	• Check capstan motor • Capstanmotor überprüfen
	• Playback picture doesn't appear. Video recording can't be performed • Das Wiedergabebild erscheint nicht. Videoaufzeichnung unmöglich	• In case of no mechanical problem: Drum is defective.(circuit is defective) • Falls kein Mechanikfehler vorliegt: Kopftrommelfehler.(Fehler im Schaltkreis)	• Check drum assembly • Kopftrommel überprüfen
3	• Playback interruption • Wiedergabe unterbrochen	• Reel rotation detection is defective. (sensor is defective, circuit is defective) • Fehler in der Spulendrehungserkennung. (Sensorfehler, Schaltkreisfehler)	• Check sensor output • Sensorenausgang überprüfen
	• Recording interruption • Aufzeichnung unterbrochen	• Idler doesn't swing • Zwischenrad ist blockiert.	• Check mechanical position as in Playback mode • Position der Mechanikteile (Wiedergabe) überprüfen
		• Reel belt is removed • Spulenantriebsriemen fehlt	• Check the reel belt is removed or not • Überprüfen, ob der Spulenantriebsriemen vorhanden ist
4	• FF operation is not performed. FF operation is defective. REW operation is not performed. REW operation is defective. Others : REV/FF is not performed. Others : REV/FF is defective. • Band wird nicht vorgespult. Fehler beim schnellen Vorlauf. Band wird nicht zurückgespult. Fehler beim schnellen Rücklauf. Andere : kein REV/FF. Andere : kein REV/FF.	• Main brake is not released (ON) T soft brake is not released (ON) Idler does'nt swing Pinch is not released • Hauptbremse nicht gelöst (ON) Aufrollhilfsbremse nicht gelöst (ON) Zwischenrad ist blockiert. Andruckrolle ist nicht gelöst	• Check mechanical position as in FF/REW mode • Position der Mechanikteile (FF/REW) überprüfen
		• Capstan motor doesn't rotate (capstan motor is defective or circuit is defective) • Der Capstanmotor läuft nicht (Capstanmotorfehler oder Schaltkreisfehler)	• Check capstan motor • Capstanmotor überprüfen

Case - Fall	Fault/symptom - Fehler/Symptom	Possible cause - mögliche Ursache	Check method - Überprüfung
5	• REVIEW is not performed • Kein REVIEW	• Main brake is not released (ON) T soft brake is not released (ON) Idler does'nt swing Pinch doesn't press • Hauptbremse nicht gelöst (ON) Aufrollhilfsbremse nicht gelöst (ON) Zwischenrad ist blockiert. Andruckrolle drückt nicht	• Check mechanical position as in REVIEW mode • Position der Mechanikteile (REVIEW) überprüfen
		• Capstan motor doesn't rotate (capstan motor is defective or circuit is defective) • Capstanmotor läuft nicht (Fehler im Capstanmotor oder im Schaltkreis)	• Check capstan motor • Capstanmotor überprüfen
6	• Slot-in is not performed Cassette can't be inserted • Kassette wird nicht eingezogen. Kassette kann nicht eingelegt werden	• When rod (24) is mounted on the mechanical deck, the position is not correct • Dreieck (24) nicht in der richtigen Stellung auf dem Laufwerk angebracht	• Check mechanical position shown in *(fig. 8)* • In *(Abb. 8)* gezeigte Position der Mechanikteile überprüfen
7	• Capstan servo doesn't work Capstan servo is uneven • Capstan-Servo funktioniert nicht Capstan-Servo ungleichmässig	• Capstan motor is defective • Fehler im Capstanmotor	• Check capstan motor • Capstanmotor überprüfen
	• Tape speed is abnormal FG pulse is not output • Bandgeschwindigkeit ist anormal Keine FG-Pulsausgabe	• Audio control head output is defective (circuit is defective) • Fehler am Ton-/Kontrollkopfausgang (Schaltkreisfehler)	• Check audio control head Check control output • Ton-/Kontrollkopf überprüfen Kontrollausgang überprüfen
8	• Audio output doesn't come out Audio output is small Audio output variation is large Audio output is uneven Audio distortion • Kein Ton Ton leise Starke Tonausgabeschwankung unregelmässige Tonausgabe Tonverzerrung	• Audio control head is defective • Fehler im Ton-/Kontrollkopf	• Check audio control head Check control output • Ton-/Kontrollkopf überprüfen Kontrollausgang überprüfen
		• Tape transport adjustment • Bandantriebseinstellung	• Perform tape transport adjustment again after confirming tape transport condition. • Bandantrieb nach Feststellung des Bandantriebszustands überprüfen
	• Audio noise Others : Audio is defective • Rauschen Andere: fehlerhafte Tonausgabe	• Hi-fi head (drum) is defective (circuit is defective) • Fehler im Hi-fi-Kopf (Trommel) (Schaltkreisfehler)	• Check drum. Check whether B+14V is supplied • Trommel überprüfen. Überprüfen, ob B+14V gespeist werden.

Wird bei den oben beschriebenen Abläufen ein Fehler in der Mechanik festgestellt, muß folgendermaßen vorgegangen werden:

- Demontage, mechanische Phasenverschiebung: reparieren
- Teilefehler, Teileschaden: Teile auswechseln

Sollte die Mechanik keine Fehler aufweisen, Schaltkreise überprüfen.

If the mechanism is found out to be defective according to the procedures described above, perform the following :

- Disassembly, mechanical phase mismatch : repair correctly
- Part defect, part damage : replace parts

If the mechanisml is found not to be defective, check the circuits.

Abbreviation list :

FF	Fast Forward
FG	Frequency Generator
REV/FF	Review
REW	Rewind
SU	Supply
TU	Take-up
UN-LO	Unload